RAILROAD GAZETTE

FRIDAY, MAY 5.

Electric Railways.

Professor W. E. Ayrton, F. R. S., delivered a lecture at the Royal Institution, on March 24, on "Electric Railways." In it he explained and copiously illustrated, by means of a series of experiments, diagrams and photographs thrown on the screen, the system of railways of the kind devised by himself and Professor Perry, which was demonstrated in action on a miniature circular line before an audience crowding the theatre from roof to floor. Mr. De La Rue presided, and among those present were Professor Tyndall, F. R. S.; Mr. W. H. Preece, F. R. S., and Sir Henry Bessemer. The whole question of electric railways, Professor Ayrton remarked, was mainly one of cost, and what we had to consider was whether electric transmission of power was cheaper than any other known system. The average weight of a locomotive was about that of six carriages full of passengers, ten of which carriages made up an ordinary train. Hence the mass of the locomotive added at least 50 per cent. to the horse-power absolutely necessary to propel the carriages alone, and, therefore, at least 50 per cent. to the amount of coal burnt. But there was another most serious objection to the engines, perhaps even more important. The heavy engine passing over every part of the line necessitated the whole line and all the bridges being made many times as strong, and, therefore, many times as costly, and the expense of maintenance consequently also was far greater than if there were no locomotive. And it was not possible to make the engine much lighter, for it would not then have sufficient adhesion to the rails to be able to draw the train; in fact, you could not diminish the weight as long as the train was propelled with only one or two pairs of driving wheels as at present. The employment of electricity, however, would enable the train to be driven with every pair of its own wheels, just as the employment of compressed air enabled every pair of wheels to brake the train. One reason why electric transmission of power could be effected with so little waste was because electricity had apparently no mass, and consequently no inertia; there was, therefore, no waste of power in making it go round a corner, as with water or with any kind of material fluid. Another reason why electro-motors were so valuable for traveling machinery was on account of the light weight of the motor. Experiment showed that one horse-power could be developed per 50 lbs. of dead weight of the electro-motor, a result immensely more favorable than could be obtained with steam, gas, or compressed-air engines. The simplest plan for electric railways was to use the two rails as the two wires, and make connection with the motor through the wheels of the train; those on one side being well insulated from those of the other, otherwise the current would pass through the axles of the wheels, instead of through the motor. This simple plan was that employed in Siemens' Lichterfelde electric railway, now running at Berlin; the insulation arising from the rails being merely laid on wooden sleepers having been found sufficient for the short length, 1½ mile. Photographs of the Siemens railway were projected on the screen, and experiments followed, providing that although two bare wires lying on the ground could be quite efficiently employed as the going and return wire, if the wires were short and the ground dry, the leakage that occurred if the wires were long and the ground moist was so great as to more than compensate for the absence of the locomotive. Consequently Professor Perry and himself had for some time past been working out practical means for overcoming these difficulties, and they had arrived at what they hoped was an extremely satisfactory solution. Instead of supplying electricity to one very long, not very well insulated rail, they laid by the side of their railway line a well insulated cable to convey the main current. The rail, which was rubbed by the moving train, and which supplied it with electric energy, they subdivided into a number of sections, each fairly well insulated from its neighbor and from the ground, and they arranged that at any moment only that section or sections in the immediate neighborhood of the train should be connected with the main cable; the connection being, of course, made automatically with the moving train. As then leakage to the earth of the strong propelling electric current could only take place from that section or sections of the rail in the immediate neighborhood of the train, the loss of power by leakage was very much less than in the case of a single imperfectly insulated rail such as had been hitherto employed, and which, being of great length, with its correspondingly large number of points of support, would offer endless points of escape to the motive current. Contact boxes were provided by Professors Ayrton and Perry at from every 20 to 50 ft., enabling the train to record graphically its position at any moment on a map hanging up at the terminus, or in a single-box, or elsewhere by a shadow which crept along the map of the line as the train advanced, stopped when the train stopped, and backed when the train backed. This ingenious device for automatically registering the train's progress was demonstrated in action, and elicited enthusiastic applause. In addition to the small sections of 20 ft. or more into which their electrically rubbed rail was electrically divided, there would be certain long blocked sections one mile or several miles each in length, for every one of which marked on the map a separate galvanometer would be provided. By another of their methods it was arranged that the connection between the main cable and the rubbed conductor should be automatically made by the train itself on entering a long section. The miniature circular railway in the well of the theatre was divided into four sections, and whenever, as was shown by experiment, a train entered on a blocked section, not only was all motive power cut off from it automatically, but it would be also automatically braked, quite independently of color-blind engine-driver, over-fagged guard, or bewildered and befogged signalman. For the present system of blocking, which was merely giving an order, such as might or might not be obeyed, the inventors proposed to substitute an absolute automatic block.

The Preservation of Iron.

The preservation of the surfaces of iron and steel from rust is a matter of such leading importance, both constructively and artistically, that we gladly embrace the opportunity of placing before our readers a few particulars respecting the progress and development of the two well-known processes for effecting this object by oxidation. These processes are respectively those of Professor Barff and of Messrs. George and A. S. Bower, and the present opportunity of reporting progress has been afforded to us by a recent visit to Messrs. Bower's works at St. Neots, where we saw the combined processes in operation. From the various notices which have appeared in our columns it will be remembered that the Barff process is for subjecting iron and steel at a red heat to the action of superheated steam, when the latter is decomposed: the oxygen combining with the iron and forming magnetic oxide, the only oxide of iron which is not affected by atmospheric conditions. The Bower processes comprise the use of ordinary air, and also of carbonic acid gas produced from the combustion of carbonic oxide inside the chamber in which the articles under treatment are placed. The Barff was admittedly better than the Bower process for wrought iron, but it was costly, while the Bower process was better for cast iron and steel, and much cheaper. The Barff process is a direct one, the magnetic oxide being formed as a direct result of the decomposition of water, while the Bower process is an intermittent one, the magnetic oxide being formed by a series of oxidizing and de-oxidizing operations. The former hitherto required the chamber or muffle to be heated by an external application of heat and the steam superheated by an independent furnace, while the latter is effected by an internal application of gaseous fuel, with more or less of air to effect either the oxidizing or de-oxidizing operations. The happy combination of the two systems has enabled the Messrs. Bower to devise a furnace which embraces all the good points of both, as in it are performed all the various operations of producing carbonic acid, generating and superheating steam, heating the chamber by either an outside or an inside application of gaseous fuel, and treating therein either wrought or cast iron at pleasure; the cost, moreover, being very materially reduced. So far as the oxidizing of iron and steel goes, it would seem that the process as now practiced, cannot well be made more simple or less costly, and there appears to be no reason why iron and steel, in every variety of form and size, should not now be used with confidence for purposes to which, hitherto, they have been applied with doubt and hesitation. Take, for example, the underground railway, and let any one examine the girders, columns, and other ironwork, which are visible, and note their condition, and he will see the necessity of such structural work being properly and permanently protected from corrosion. Let any one, too, examine the condition of the underground pipes, both of cast and wrought iron, by which our gas and water are supplied, and he will come to the conclusion that an extra pound or two per ton expended on their preservation at starting would be money well spent.

Not only, however, is there a wide field for the application of the process to useful purposes connected with construction, but for domestic and art work, where the field appears to be illimitable. The ordinary pots and pans of a kitchen, grates and fenders, and other ironmongery of houses, can all be oxidized at a cost almost as small as that of painting, while it has recently been discovered that the process of enamelling is much expedited and reduced in cost by first oxidizing the article. For ornamental purposes gold and other metals can be deposited direct on the oxide by a very simple process, with the certainty that they will remain there, and not be thrown off by corrosion underneath. The same may also be said of paint where it is necessary to use it for decorative purposes. When once on the coated iron, there it remains, and will be no more affected than it is on wood or stone. In this connection it is interesting to note that Mr. Bower has recently patented a very curious and interesting discovery which will still further enable iron to be used in substitution of the more expensive metals. The patent consists of a metallic brush, the wires of which are formed of the metal it is desired to deposit on the iron. On applying the brush briskly to the surface of any article which has been first coated with magnetic oxide, some of the metal is deposited, producing a very beautiful effect; all the prominent parts having the greatest deposit, which gradually shades off to the color of the magnetic oxide, which is a pretty French gray; so that in this way gold, silver, nickel, copper, brass, bronze and other metallic alloys may be deposited by mere attrition. If the article is slightly heated after the operation, the metal appears to be permanently fixed. Mr. Bower considers it to be a purely mechanical operation, and to be due to the fact that magnetic oxide not being a metal, and presenting a somewhat gritty and porous surface, the metal of which the wire is composed is taken off by friction and the pores filled up, as when this has been once done no other metal can be deposited upon it by the same means. The brushes may be actuated by manual or mechanical power, the cost being but little more than the labor, as the metal is deposited in a very attenuated form. Here then is another wide field for the use of the Bower-Barff process for art purposes; indeed, it would seem that the limit is indefinable, and that iron will maintain its high position for all purposes, seeing that it can now be preserved from corrosion and used with safety for constructive purposes, while for art-work the process will enable iron and steel to be used in place of the more expensive metals. We understand that the various English patents relating to the Bower and Barff protecting processes have now become the property of an English company. The same may be said of the continental patents, which have been transferred to a French company having its headquarters in Paris. We have recently heard of an order being given to the French company for coating 12,000 stoves, and the process is being taken up with great spirit in Germany. It would seem, therefore, that those interested in the production and application of iron and steel are welcoming a process which will not only confer important advantages upon themselves, but also upon those who are still more widely interested—the public at large.—*Iron.*

Trial of a Station Master for Negligence in India.

The following report of a trial in India, which we copy from the *Indian Railway Service Gazette*, will be interesting because of the proceedings as well as in its nature:

EMPRESS *versus* Belias Row,
Late Assistant Station Master, Beawur,
and
Devee Jemedar.

Before W. R. Lawrence, Esq., Ass't. Com'r., Beawur.
Mahomed Ismail, Vakeel, appears for Belias Row.
Mr. Meehan, Traffic Inspector, Rajpootana Railway, for prosecution.

In this case Belias Row, late Assistant Station Master, Beawur, is charged under section 26, Act IV., of 1879, with having endangered the safety of certain persons by disobeying a rule contained in the working time-bill published by the Rajpootana-Malwar Railway, in force on and from the 15th of November last.

This rule is that when a station master of any station, with the exception of Agra Fort, Delhi, Bandikut, Phalera, Ajmere, Soojat, Nana and Palanpoor, gives line clear to an incoming train, he must himself ascertain if the points are properly locked over for the line on which the train is to be admitted.

The prosecution interpret this as meaning that the station master is to personally inspect the points, and charge the accused with having disobeyed this order.

The vakeel raises this objection, 1st, that the rule alleged to have been broken by accused has not received the sanction of the Governor-General in Council, as required Section 8, Act IV., of 1879.

The Traffic Inspector: The railway administration is empowered under Section 8, Act IV. of the Indian Railway Act, to make general rules for regulating the working and management of the railway, which rules are binding on railway servants by the terms of their employment.

The Magistrate: I am of opinion that Sec. 26 B embraces and contemplates necessary rules and by-laws.

Vakeel for defense objects to accused being charged under Sec. 26, states no one's safety was endangered, consequently should be charged under Sec. 25, as having by negligent omission acted in such a manner as was likely to endanger the safety of any person.

Traffic Inspector: I object to the charge being altered. Sec. 25 would be applicable where the negligent omission *would be likely* to endanger the safety of any person. In this case it did endanger the safety of the passengers in the mail train.

The Magistrate: I hold that the fact of a collision having actually taken place brings this case under Sec. 26.

John Honeyford deposed: I was driving No. 2 down mail on the 7th of January last. I got line clear at Sendra and ran into Beawur, passing the signals all right. On crossing the facing points I almost immediately noticed that I was on the wrong line, and on looking ahead I saw a goods train on the line I was on. I at once pulled up, and had hardly time to do so. I knew it was useless to whistle, and ran into the goods train, breaking the cowcatcher. There is a considerable incline from Sendra, and as a rule I run into Sendra at a great speed.

Examined by the Traffic Inspector: I left Sendra right time, and was coming into Beawur on that night at a slow speed. If I was late I should have gone at a greater speed into Beawur, and the result would have been very serious indeed.

Hazaree Lall, Station Master, Beawur: I have been station master at Beawur for 1½ years. I work from 6 a. m. to 6 p. m. My duty consists in examining goods shed, every office, and see that they are in good order, check telegraph books, and inspect the points and signals once a day, and look after the correspondence, and am responsible for all cash, goods and passengers. I have seen the working time-bill, have a copy. I have read Sec. 25, I take the words, "himself ascertain" to mean that I must inquire from the pointsman jemedar. This man is appointed for this purpose. The jemedar is responsible for the opening and locking of the points. His work at Beawur is the same as it is in Phalera and Bandikut. The station master has too much work to go to the points himself, I would never have signed the agreement I did if I had known that I was expected to act according to the prosecutors' interpretation of Para. 25 of the working time-bill. As I have said before, I have no time to see the points myself; there are three pointsmen and a jemedar at the Beawur Station. I have perfect reliance on the pointsmen, and always feel secure when they report the points set.

Examined by the Traffic Inspector: I read the instructions in the working time-bill when I received it, and understand thoroughly the meaning of Para. 25, Clause 2. The facing points at Bandikut and Phalera are I believe kept open, at Beawur they are kept closed, they are opened only when there is shunting to be done or when a train is to be admitted into the second or third line. I have read Paras. 51 to 56 of the traffic manual. I was not aware that the instructions given therein were for jemedars at stations where the facing points are kept open, and did not refer to Beawur. It is true that the mail train was placed on the third line once before by mistake, and a pointsman was fined for it, that was before Para. 25 of the working time-bill came in force.

Mr. *Meehan* puts in a copy of the working time-bill in force from Nov. 1, 1881.

Mr. *Meehan*, on behalf of the railway, withdraws the charge against Devee Jemedar.

Devee Jemedar discharged.

Accused on being asked if he was guilty, stated that he instructed the pointsman jemedar to close the west facing points, and he returned shortly after, reporting that he had done so. Accused states he did not know it was his duty to see the points himself; he interpreted the meaning of the words "himself ascertain" in Para. 25 as meaning to ascertain through another man. He did not take ascertain to mean see, and pleaded for mercy on the grounds that the neglect of his duty was due to his ignorance of the meaning of the words "himself ascertain."

Guard Hunt was called and asked what he would infer from the meaning of the words "himself ascertain." Stated that he would take it to mean that the station master should go to the *points himself*, and ascertain from personal inspection that they were locked.

Five witnesses were then called on behalf of accused, who were told to peruse Para. 25, Clause 2, of the working time-bill, and tell the Court what they took the words "himself ascertain" to mean. They all, without exception, stated that they would take it to mean that the station master should satisfy himself, either from personal inspection or from inquiry.

JUDGMENT.

The facts of the case are clear, and are admitted by accused. On Jan. 7, 1882, the down mail from Sendra, instead of running on to the station line, ran into the second line, colliding with the 23 up goods train. John Honeyford, the driver of the mail train, seeing all clear, ran into the Beawur station; on passing the points saw on the second line a goods train; he at once pulled up only just in time to escape with no further injury than a broken cowcatcher. Had he been making up lost time, the accident would have been most serious, as the run into Beawur from Sendra is down a steep incline.

The real point at issue is whether the accused ought to have gone personally to inspect the points before giving the line clear. According to Section 25 of the working time-bill, the prosecution maintains that the words "himself ascertain" can have only one meaning, *viz.*, ascertain with his own eyes. The accused on the contrary says that the words mean, that the station master must be satisfied, either by personal inspection or by report, that the points are correct, and that the report of the jemedar is sufficient, and that jemedar is appointed for this purpose. But there arises a question; in the traffic manual compiled by the Rajpootana Railway, certain rules are laid down for jemedars *at stations where running points are kept open.* Now these stations are the ones specially excepted in Section 25 of the working time-bill. Beawur is a station where the running line points are to be kept locked. All the officials at the Beawur station say they have one interpretation for the words "ascertain himself," *viz.*, inquire. In August, 1881, this same mail train was run on to the third line by a similar error; at that time a mixed train was on the second line, and had there been any goods train in the station it would of necessity been on the third line.

Yet in spite of this previous accident the accused pleads that he has carried out Rule 25.

I can only read the words "himself ascertain" in one way, *viz.*, that the station master's duty is to see personally that the points are clear. I cannot help thinking that the accused

knew what his superiors meant by the words "himself ascertain;" if he did not know he ought to have asked some superior officer to interpret the meaning. I find accused guilty.

The danger caused to the public, and the neglect of the accused, must render a sentence of imprisonment necessary as a warning, if nothing else.

I sentence the accused to six months imprisonment,

(Sd. W. R. LAWRENCE.

been exceedingly painful, my position as prosecutor prevents me from appealing. The prisoner has hitherto borne an irreproachable character.

The Magistrate: The public must be protected; I cannot help the prisoner.

The prisoner was then manacled and remanded to jail. The Court was crowded with spectators, who expressed their sympathy with the prisoner by raising a subscription for the support of his wife and children.

Fig 6.

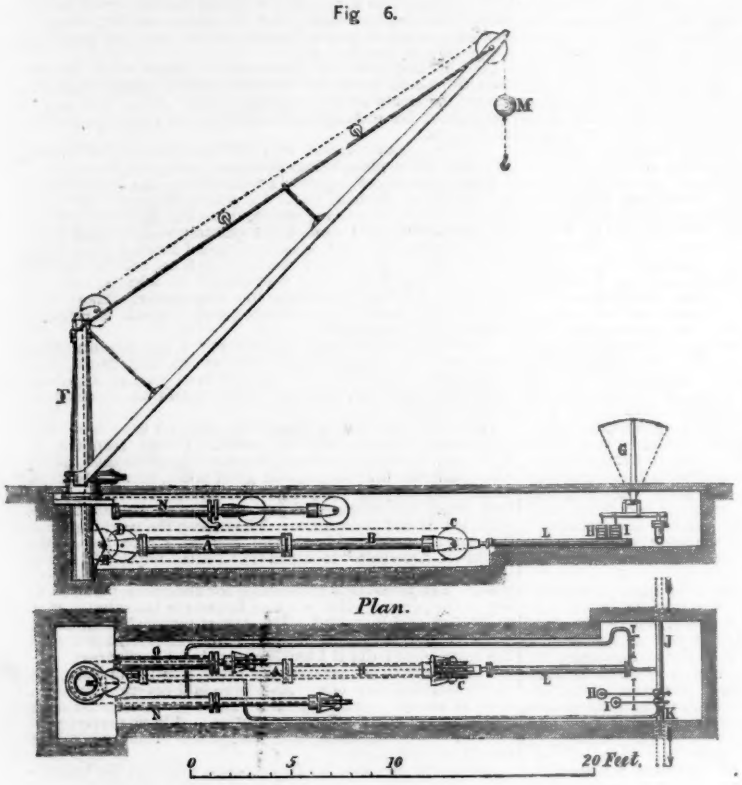


Fig. 7.

HYDRAULIC CRANE.

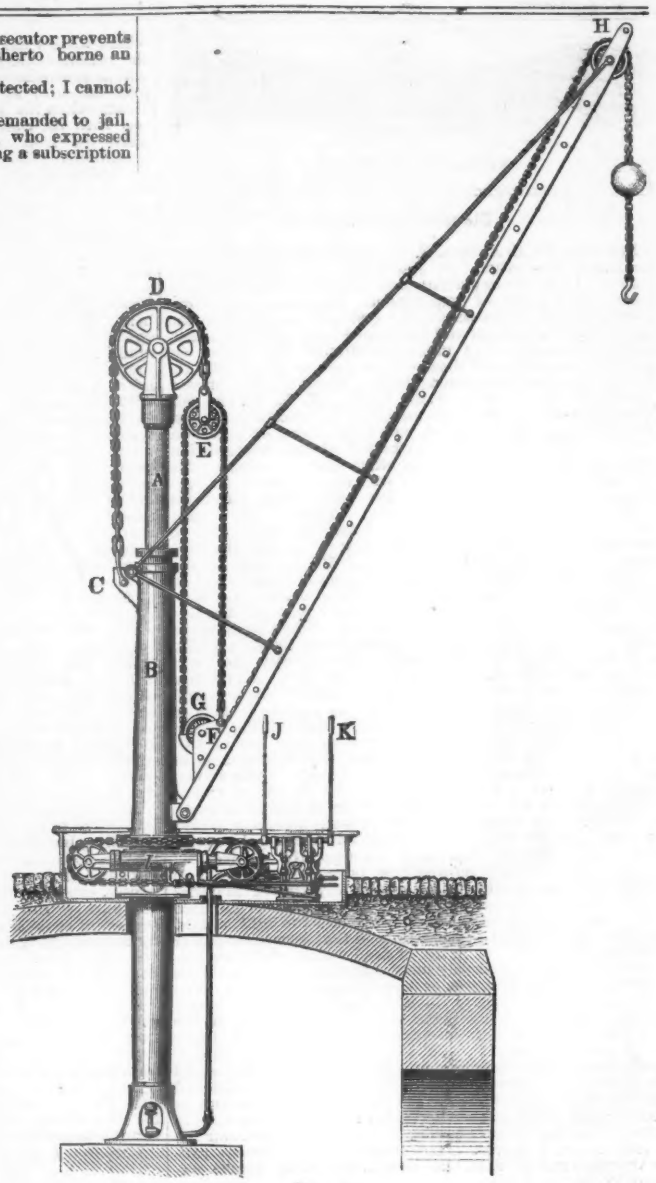


Fig. 11.

HYDRAULIC CRANE.

Fig. 9.

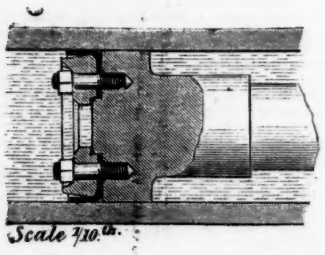
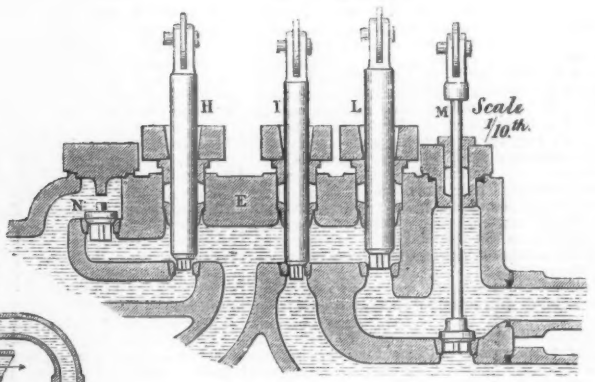


Fig. 10.



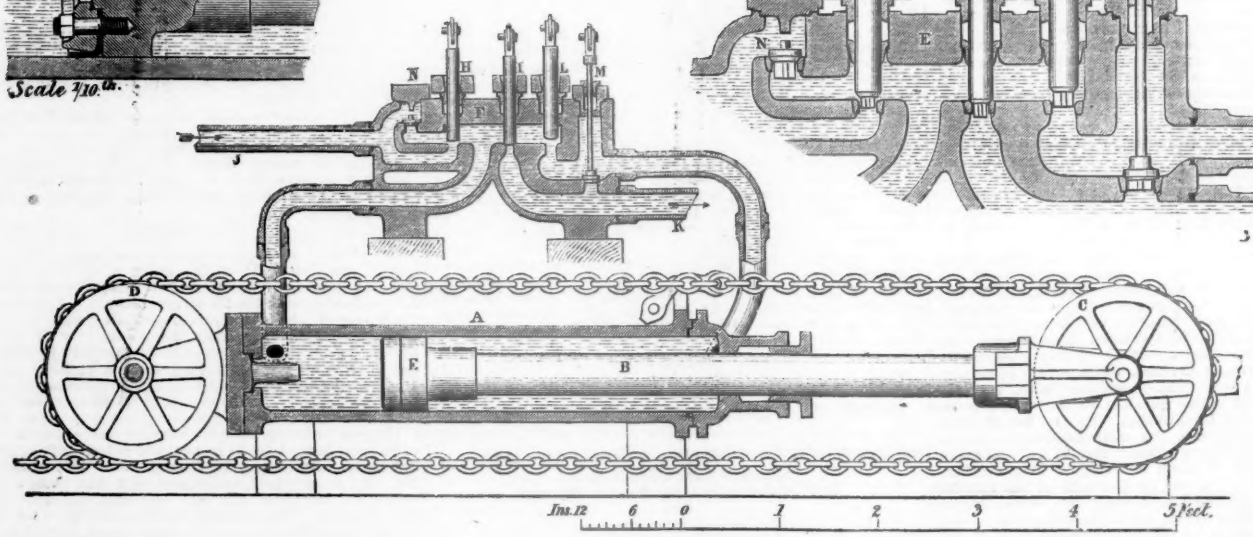


Fig. 8.

DETAILS OF HYDRAULIC CRANES.

Supplement.

After sentence was passed:

Prisoner (in tears): Have mercy on me, I have a wife and children; do not send me to jail; who will look after my children? what will they do? they will starve, they will die.

The Magistrate: I am very sorry for you. I cannot help you; when your term of imprisonment expires I have no doubt you will be re-employed.

To the Traffic Inspector: Can you appeal on prisoner's behalf?

The Traffic Inspector: I feel extremely sorry; I wish I could appeal on prisoner's behalf. My duty this day has

An English Goods Station.

III.

In a paper on "The History of the Modern Development of Water-pressure Machinery," by Sir William Armstrong, and read before the Institution of Civil Engineers in 1877, he says:

"Hydraulic cranes were first adopted, for railway station purposes, by the York, Newcastle & Berwick (now the Northeastern Railway Company. This took place in 1848. The station selected was the Trafalgar goods station at Newcastle-upon-Tyne; and the credit of the introduction belongs to Mr. Harrison, Past-President, Inst. C. E., who has throughout been very instrumental in the promotion of this system.

"In 1851 the late Mr. Brunel became an advocate for the employment of hydraulic pressure for the general purposes of a railway station, and was the first to propose its application to turn-tables and traversers, and also to capstans for hauling wagons. An extensive plant of such machinery was accordingly erected under his direction at the Paddington station of the Great Western Railway, and gave a considerable impulse to the adoption of that class of machinery by railway companies in general.

"In the application of water-pressure, not only to cranes,

but for other purposes, the form of mechanism which prevails to the greatest extent consists of a hydraulic press with a set of sheaves used in the inverted order of blocks and pulleys, the object being to obtain an extended motion in the chain from a comparatively short stroke of piston. The general arrangement of the machinery for working a hydraulic crane is shown in figs. 6 and 7, fig. 6 being an elevation and fig. 7 a plan. The pressure cylinder *A* for lifting the load is, in this case, fixed horizontally below the surface of the ground in a chamber at the foot of the crane, and is fitted with the ram *B* carrying the pulleys *C* at its outer extremity. The lifting chain is made fast at one end of the cylinder *A*, and passes alternately round the movable pulleys *C* and the fixed pulleys *D* at the inner end of the cylinder *A;* and is then led round the guide pulley *E* up the crane post *F* and along the jib to the load, as shown by the dotted line. The motion of the lifting chain is controlled by means of the handle *G*, acting upon the inlet and outlet valves, which are kept closed by the weights *H* and *I:* by opening the inlet valve *H* the water is let into the cylinder *A* from the pressure pipe *J*, fig. 7, and raises the load; and by opening the outlet valve *I* the water escapes from the cylinder into the exhaust pipe *K*, allowing the load to descend. The travel of the ram *B* in the outward stroke is prevented from exceeding the proper limit by the pulley-block *C* coming in contact with a stop connected with the handle *G*, which closes the inlet valve *H* and prevents the load from being raised too high. The return stroke of the ram is effected by the load suspended from the chain; and in the absence of any load a small supplementary ram *L* is employed to force the main ram *B* back, the slack chain being made to run out by the weight *M*.

"To meet the variation in load it was formerly the practice to combine three of the pressure cylinders so as to act either separately or collectively upon the lifting chain; but the writer has more recently introduced a method by which a variation of power is obtained with a single bored cylinder fitted with a combined piston and ram. Fig. 8 is a longitudinal section of the cylinder and valves of a double-power hydraulic crane; fig. 9 is a section of the piston enlarged; and fig. 10 shows the valves in detail. *A* is the cylinder fitted with the piston *E* and ram *B*. The water from the accumulator enters the valve chest *F* through the pressure pipe *J* and the inlet valve *H*. For the lower power the water is admitted to both sides of the piston *E* by opening the valve *L*, as shown in the drawing, in which case the power exerted and the water expended are each proportionate to the area of the ram *B*. For the higher power the valve *L* is closed and the valve *M* opened, so that the front side of the piston *E* is thrown open to the exhaust *K*, and the result, both as regards power and expenditure, is then proportionate to the full area of the cylinder *A*. It is seldom necessary to have more than a double power; but where a lower or third power is required a smaller ram may be inserted within the other, but in this case it is necessary to make fast the larger ram while the smaller one is at work. For lowering the load the valves *H* and *M* are closed and the outlet valve *I* opened, allowing the water to escape from the cylinder *A* into the exhaust pipe *K*, at the same time the valve *L* is also opened to allow the water to follow up the piston in the inward stroke.

"In hydraulic cranes the power is applied not only for lifting the load, but also for swinging the jib, which latter object is effected by means of a rack or chain acting on the base of the movable part of the crane, and connected either with a cylinder and piston or with two single-acting cylinders applied to produce the same effect by ultimate action. Figs. 6 and 7 show the arrangement of the two cylinders *N* and *O* for turning the crane, fitted with rams, acting by a chain passing round the base of the crane post *F*. The motion is controlled by means of a slide-valve worked by a handle situated beside the handle *G*, so that while the water is admitted to one cylinder the other is open to the exhaust. The travel of the rams is limited by means of a tappet rod connected with the handle of the slide-valve, whereby the crane is prevented from being turned too far."

Fig. 11 is an elevation of the cranes used in the Forth station. In these the lifting ram *A* and cylinder *B* are placed vertically in the crane post. One end of the main chain is fastened at *C*, and it then passes over the pulley *D* and carries another pulley, *E*, on the other end. The lifting chain is fastened to the jib at *F*, then passes over the pulley *E* down and around the pulley *G*, attached to the lower end of the jib, and up and over the pulley *H* at the upper end of the jib. The crane is swung round by two horizontal cylinders *I*, one on each side of the crane-post below the floor, and which act in the same way as those shown in figs. 6 and 7. The movement of the crane and its load is controlled by the two levers *J* and *K*.

"The absence of any sensible elasticity in water renders the motion resulting from its pressure capable of the most perfect control by means of the valves which regulate the inlet and outlet passages; but this very property which gives so much certainty of action tends to cause shocks and strain to the machinery by suddenly resisting the momentum required by the moving parts. Taking, for example, the case of a hydraulic crane swinging round with a load suspended from the jib, the motion being produced by the water entering into one cylinder and escaping from the other, it is obvious that if the water passages be suddenly closed, the ram of the latter, impelled forward by the momentum of the loaded jib, but met by an unyielding body of water deprived of outlet, would be brought to rest so abruptly as to cause, in all probability, a fracture of the machine. So also in lowering a great weight; if the escape passage be too suddenly closed, a similar risk of injury would arise from the sudden stoppage of the weight, if a remedy were not provided. But these liabilities are effectually removed, in the case of a single-acting cylinder, by employing a relief valve in connection with the water passages, consisting of a small clack valve *N*, fig. 10, opening upwards against the effective pressure, so as to permit the pent up water in the cylinder to be forced back into the pressure pipe whenever it becomes subject to a compressive force exceeding the pressure given in the accumulator. In the case of a double-acting cylinder fitted with a piston and slide-valve, or when two single-acting cylinders with rams working alternately are controlled by a slide-valve, as in the instance of the cylinders *N* and *O*, fig. 7, for turning the crane, relief valves, consisting of four small leather flap-valves, are employed in connection with the slide-valve."

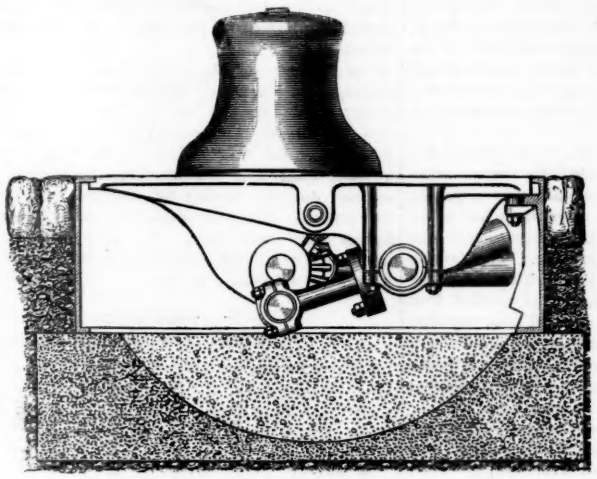


Fig. 12.
HYDRAULIC CAPSTAN.

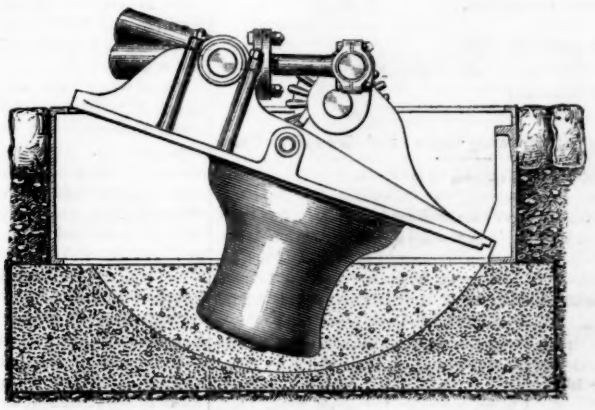


Fig. 13.
HYDRAULIC CAPSTAN, INVERTED.

Figs. 12, 13 and 14 represent one form of railway capstan, driven by a pair of oscillating cylinders. The latter are attached to the under side of the bed-plate of the capstan and are connected to cranks on the shaft carrying a level wheel which gears into another attached to a spindle of the capstan. The bed-plate is hung on trunnions, so that the whole machine can be turned over, as shown in fig. 13, so as to give access to the machinery underneath. The water to supply the cylinder is introduced through these trunnions. Recently these machines have been made with three cylinders connected to a single crank on the vertical spindle of the capstan.

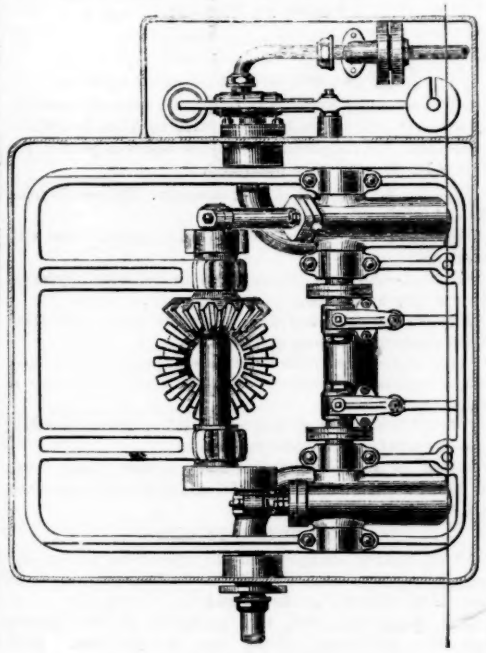


Fig. 14.
INVERTED PLAN OF HYDRAULIC CAPSTAN.

The machinery in the Forth station was supplied from the celebrated works of Sir William G. Armstrong & Co., Newcastle-on-Tyne, and the whole equipment of the station is said to be one of the most complete of its kind in England.

To what extent it is practicable to apply hydraulic machinery of this description to handling freight in our stations it is difficult to say. The practice here of carrying so large a proportion of it in box cars presents a great obstacle to the use of cranes. In Great Britain goods are nearly all carried in open cars or "wagons," and are protected from the weather, when it is necessary, by covering the car with a tarpaulin. Some few box cars are, however, used, but they generally have a door in the roof, so that goods can be hoisted or lowered through this door. It might not be difficult to arrange appliances to drag freight out of a car with a crane, but to convey it into the car by the same means would be more difficult. There can be no doubt, though, that freight can be handled much more cheaply with hydraulic power than it can be by hand, and therefore its adaptation to our requirements presents a problem, the solution of which would result in very great economy to many of our railroad companies. It might as well be admitted that in the use of hydraulic machinery and its application to all kinds of work where heavy objects must be lifted, English practice is about a quarter of a century in advance of ours. It is now applied in Europe not only to fixed cranes of all kinds, but also to movable cranes, hydraulic hoists of various kinds, for warehousing goods, feeding blast furnaces, discharging and loading ships with coal and other freight, for raising and lowering cars, for docking ships, for opening and closing sluices, for moving draw and swing-bridges, for handling guns, and for all kinds of what Englishmen call "lifts" or elevators.

It is true that we would encounter some special difficulties in using water-pressure machinery, owing to the coldness of our climate; but by using some non-freezing liquid that trouble would be obviated. In cases where the parts are exposed in the Forth Station, the danger of freezing is obviated by burning a gas jet in the cold weather in the chamber containing the mechanism. In an English winter this is effectual, but it might not be here.

It is to be regretted that no data concerning the cost of handling freight with these appliances can be given, or comparisons of the expense where such machinery is used with that of our own method of doing it by hand.

Contributions.

Brakes on English Freight Trains.

ATLANTA, Ga., April 24, 1882.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The publication of your article and illustration of the goods station at Newcastle-upon-Tyne, leads me to ask a question which has occurred to me and my associates, and to which I have seen no reference in your interesting accounts of European railroad practice. What easy and safe method of communication do brakemen have in passing from the caboose to cars near the engine? Gondolas covered with tarpaulins are used to a great extent, but their irregular surface would be more objectionable than our running boards on box cars of nearly uniform height. It seems to me that the cranes you speak of could come into general use only in connection with flats and gondolas. N.

[In England freight trains are controlled by "brake vans," that is, heavy cars fitted with brakes which are attached to all freight trains. The brakes on the ordinary cars, or "wagons" as they are called there, are not used while the train is running on the road, consequently, it is not necessary for the men to pass over the tops of the wagons. On short trains one van is used at the rear end of the train; on longer trains another van is placed in the middle and occasionly still another is used next to the tender.

It is true that there is some difficulty in using cranes with box cars, but on English roads these are made with a sliding door in the roof, through which the "goods" are hoisted or lowered. It seems probable, though, that some one will be ingenious enough to devise means by which freight may be swung into and dragged from box cars by cranes. But without this all that is needed to use them with our cars would be one or two men to wheel the goods to or from the door in the car.]

The Next Master Mechanics' Convention.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Having received numerous inquiries as to the time of holding the next annual meeting of the American Railway

Master Mechanics' Association, will you please publish the following for the benefit of those interested?

At the fourteenth annual meeting, held in Providence, June 14, 15 and 16, 1881, the following amendment to the constitution was introduced by Mr. Wilder: "Resolved, that Section 1 of Article V. of the constitution be amended so as to read, 'The regular meetings of the Association shall be held annually upon the third Tuesday in June,' which was unanimously adopted."

The General Supervisory Committee would therefore respectfully call the attention of members to this change, and urge that they endeavor to make arrangements to attend this meeting, and those master mechanics not heretofore connected with the organization are especially invited to be present and participate in the proceedings.

The subjects to be brought forward this year are varied and interesting, and the committees are composed of the foremost men of the machinery departments of our railways, and able reports may be looked for. Papers are also expected from eminent professors and scientists of the Association. The meeting this year will be held at Niagara Falls, at the International Hotel, where special arrangements have been made for members and their families.

By order of the Committee. J. H. SETCHEL, Secretary.

CINCINNATI, April 25, 1882.

[The third Tuesday of June this year is the 20th of the month.—EDITOR.]

Maintenance of Drawing-room and Sleeping Cars.

TO THE EDITOR OF THE RAILROAD GAZETTE:

It has been my purpose, in collecting the material for this article, to show the railroad public some facts as to the cost of keeping in ordinary running repairs drawing-room and sleeping cars. The figures herewith appended include the cost of all the repairs necessary to keep the cars in service a reasonable length of time before needing a general rebuilding. Of course the heaviest items of cost have been those for truck repairs, wheels, axles, etc.; but all the parts, both body and trucks, were kept in good condition.

How this problem may be regarded by others I am not permitted to know. I have, however, for some years past, been interested in and have appreciated the importance and value of detailed statements as to cost of the various branches of railroad service, as leaders to correct results, and have from time to time, as opportunity offered, put in systematic operation measures whereby facts of ultimate importance could be reached. Now, if sufficient interest could be awakened to induce those whose position leads them naturally to consider these problems, to put in operation some methods by which these important results could be obtained, much valuable knowledge might be imparted. A little time prudently expended each day will result in many valuable facts.

It is, perhaps, safe to assume that not a man to-day can tell actually what it costs for repairs, per mile, to maintain a car in service. Is a knowledge of this fact really of so little importance or value that no one cares to know, or how must you account for it? Is it not because we cannot see just how to get at it, or do not have the time or disposition to meddle with it? If the first proposition be true, I have wasted much valuable time; if the latter, I shall feel that I have been of some service to those interested in this matter.

I have, for the purpose of this statement, taken seven cars, for two years, in a line having a continuous run of over one thousand miles, and find the total mileage has been 2,096,956 miles, and the total cost of repairs has been $11,861.29, as follows. (We will designate the cars by numbers):

No of car.	Miles run.	Cost of repairs.	Cost per mile.
1	282,640	$1,762.11	$0.00623
2	292,696	1,644.50	0.00561
3	311,940	1,803.89	0.00578
4	314,040	1,548.45	0.00493
5	298,440	988.10	0.00331
6	276,520	1,928.28	0.00697
7	320,680	2,185.96	0.00681
Total	2,096,956	$11,861.29	
Average miles run per car for two years			299,565
" cost of repairs per car for two years			$1,694.47
" cost per car per mile			0.00565

How can we arrive at the comparative value of different appliances if not in this way? It will be noticed that quite a variation in cost exists between the different cars, which, of course, those familiar with these matters will readily understand.

The expense, greater or smaller, depends very largely upon having every wearing part carefully and correctly adjusted as well as properly proportioned to stand the strains coming upon them. The forms and material used and the methods of construction have also much to do with the strength and durability, as I have had occasion to notice in various tests made. Take the country through, there is a wide margin for improvement in the construction of our passenger car trucks, as the hot boxes on many of our roads give abundant evidence. The removal of this source of trouble alone would result in a large saving of expense.

Let me indicate here some of the improvements which have been made. A few years ago nearly all freight car trucks were constructed of wood, put together in the rudest manner, and the expense of maintaining them was almost endless; to-day many of the roads have devised simple and durable iron trucks, with oil box covers fitted nicely and attached perfectly, and the result is that where these improved trucks are used the expense of maintenance is almost nothing, leaving perhaps out of the question wheels, axles and brasses; but these, owing to the more perfect construction and adjustment of parts when built, and the greatly reduced liability of getting out of true, of oil box covers being lost and dirt supplying the place of oil, have a much longer life; for it is an undeniable fact that when a truck gets out of true and shaky, as the old styled ones always did by the wearing of parts and shrinkage of wood, the expense of repairs in this condition was simply enormous.

Now, if a uniform freight car truck of some improved pattern made of iron or steel could be adopted (and there is not a shadow of reason why there cannot be), the annoyance and expense of maintaining the freight car trucks of the country would be reduced beyond our power to estimate, and the delays caused in the movement of cars by damage or breakage occurring to special parts, which have to be supplied by parties perhaps a thousand miles away, or involve the expense of patterns, would alone yield a good profit.

These questions are continually forcing themselves upon us for solution, and no one questions the opportunity for improvement, and if the millenium is ever to dawn upon this difficult question of uniformity of parts in railroad construction, something must be done differently to-day or to-morrow from what we were doing yesterday or the day before, or else we shall be like the old man who could not do a thing, because he never had done it, and it almost seems that it has come to this with the railroads. They never have had uniformity, and this is the reason why they never can have. You may call this good logic or whatever you please, it does not alter the fact.

There was a time, not very long ago, when there never had been a railroad, and then all the old folks said we never could have one; but we have, and we are now enjoying their benefits. There was also a time when there had never been a steamboat or telegraph line, and almost every one said we never could have; but we have them. Some fanatic—or call him what you please—was foolish enough to declare that we could have these things, and he worked that problem out, and we have them, and we shall have uniformity in railroad construction and in consequence reduced expense of maintaining the same, notwithstanding we hear railroad men say almost every day that we never can have; but we shall have some time—I do not know when.

We are led to these reflections from the fact that we see so many railroads so utterly indifferent to anything that looks to improvement or advancement. These are, however, vital questions, and sooner or later, as competition increases, managers will be forced to handle these practical matters; for it is more and more becoming a fact that the life of our railroads must depend largely upon a shrewd management of the expenditures. Then the question will come how and where can we reduce expenses without crippling the operations of the road, and our answer will be by making all wearing parts of car equipment simple, substantial and uniform.

In connection with this statement I think it is proper to say, as a matter of judgment, that cars running in local service are usually maintained at a less cost than the figures shown here. I hope at some future time to be able to make an exact statement as to cost of repairs for local cars per mile.

ADVANCEMENT.

Papers on Painting.

BY CHARLES L. CONDIT.

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As it is necessary to use very frequently some of the terms defined in the first installment of these articles, but which readers may not remember, we repeat below a part of the "Little Dictionary" then published:

Glycerine.—To be had of your druggist. It is made from oils and fats.

Glycerine Ether.—Glycerine as it exists in oils, united with an oil acid.

Oil Acid.—An acid which when linked with glycerine ether is known as an oil.

Oil.—An oil acid linked with glycerine ether, and from which glycerine and soap can be made.

Soap.—An oil acid linked with soda, potash, lead, zinc, iron or some such substance. Some soaps do not dissolve in water.

Free Oil Acid.—An oil acid unlinked from glycerine ether, but not united with another substance.

Flying Oil Acid.—An oil acid which becomes lighter than air (due to action of heat or light) and flies away as would a gas.

THE DRYING OF OILS.

All oils tend to change in the air; those less pure changing most rapidly. Butter which has not been properly freed from buttermilk is a good example.

This change is, first, the unlinking of the oil-acid and the glycerine, setting the oil-acid free. Still, exposed to the air the oil may give a sharp, unpleasant odor and taste due to further changes; it has become rancid. Rancid butter may be sweetened, however, by washing it with some substance which will form a soap with these rancid acids and remove them. Lime water is sometimes used for this purpose; and the clearing up of a fatty linseed oil by litharge is an action of the same nature. In this case a lead soap is formed by the acid and the litharge.

The drying part of the linseed oil—*i. e.*, the linolein (linseed oil acid and glycerine ether) does not become rancid. The same is true of the drying portion of poppy oil and of other drying oils. The drying parts of these oils thicken and change into sticky, elastic, or into leather-like substances, all of which are water-proof, and upon all of which water has only a small influence.

The Changes in Oils.—The chemical changes in oils which become rancid and in oils which "dry" are of the same nature; the results are different because the oils are different.

The science of chemistry is founded upon weight. If a substance changes and weighs heavier than before the chemist is sure it has gained something. If a substance changes and weighs less, he is sure that it has lost something. He then proceeds to discover what it is that has been gained or lost, and in this his scales are again useful in weighing other substances with which this one has been in contact, in order to discover which of them has taken the lost something, or has given up the something gained.

Linseed oil in drying gains from 8 per cent. to 10 per cent. in weight. A French chemist exposed some drying oil to the air. It weighed about 155 grains; after 18 months, about 166 grains. It had gained about 11 grains, or more than 7 per cent. of its weight. In speaking of the drying of linseed oil, therefore, we mean merely a change from a fluid to a solid condition. There is a loss of something, as we shall see, but there is a gain which not only makes up in weight for this loss but usually leaves the same quantity of linseed oil 10 per cent. heavier than before it became "dry."

The Influence of Darkness, Light and Colored Light on Drying Oil.—A Dutch chemist, who has made a careful study of the drying of oils, arrived at the conclusion that linseed oil increases in weight in exact proportion to its becoming dry.* Without entering, as yet, into the question what it is that increases the weight of dried oil, we can study its drying by observing simply its weight. Any one may do this by comparing the following groups of figures with each other. We shall leave them in that measure of weight which the chemist uses, namely, grammes. A gramme is 15.432+ grains.

TABLE NO. 2.

Gained in Weight as Below.

OIL DRYING AFTER.	In darkness	Under uncolored glass.	Under red glass.	Under green glass.	Under blue glass.	Under yellow light.
Days.						
10	0.000	0.126	0.009	0.005	0.089	0.012
20	.001	.258	.027	.023	.245	.041
30	.002	.317	.048	.076	.332	.103
40	.003	.326	.082	.139	.376	.184
60	.007	.298	.178	.269	.388	.319
80	.013	.272	.284	.354	.370	.388
100	.018	.261	.338	.401	.357	.417
120	.024	.273	.376	.438	.360	.442
150	.035	.300	.441	.485	.399	.474

Comparison of the increase by weight of the drying oil under the several glasses gives the order of drying as follows: Most rapid under the uncolored glass, then follow blue, yellow, green and red, but this order is of no consequence, nor trustworthy as a constant fact.

After 150 days, on the contrary, the gain in weight is greatest in the following order, under green, yellow, red, blue and uncolored glass.

In darkness there is no drying, or it proceeds so slowly that it may be said not to go on at all. *Light is the first natural drier of oil.*

There is another experiment by a more accurate chemist, in which the gain and loss in weight of the drying oil is given day by day. The oil was spread upon surfaces, one exposed to the sunlight, the other remaining in half darkness. The measure of weight is in grammes and decimals of a gramme, as before.

TABLE NO. 3.

Oil Drying.

Date.	In sunlight. Grammes.	In half darkness Grammes.
April 29	6.860	7.802
April 30, g'd.	.03	Nothing.
May 2, "	.174	.004
" 3, "	.226	.004
" 4, "	.044—0.474 in 7 days.	Nothing.—0.008 in 7 days.
" 9, "	.034	.034
" 14, lost.	.041	Gained .180
" 20, "	.030	" .378
" 28, g'd.	.026	" .220
June 4, "	.024	" .012
" 11, lost.	.043	Lost .028
" 18, "	.014	" .006
July 26, g'd.	.085	Gained .033
Aug. 19, "	.014	Lost .003
Total gain	.657	.865
Total loss	.128	.037
	.529 gain.	.828 gain.

The powerful influence of light upon the drying oil is shown in the plainest figures by these two tables. They indicate that a painting or varnishing shop should have many windows, and a great abundance of uncolored light—no sort of driers in a shop are more valuable than windows.

These tables also show that oil loses as well as gains something in drying, and that the least loss or greatest gain after many days is in slowly drying oil.

Influence of Heat.—The following table shows the influence of heat upon drying oil:

The applied oil was kept in a room having a temperature about equal to that of the Eastern states in the latter part of May and the early part of June (from 59° to 68° F.). One of the oiled panels was subjected to a considerable heat for several hours each day (a heat of 176° F.).

* Not absolutely but practically so, under the same conditions.

TABLE NO. 4.

Oil Drying.

The panel not heated weighed	2.466 grammes.
The heated panel weighed	1.934 "
1st day—While heated for 2 hours	gain .018
After heating	" .072
	.090
Panel not heated	" .002
2d day—While heated for 4 hours	gain .056
After heating	" .065
	.121
Panel not heated	" .002
4th day—While heated for 6 hours	.032 lost
After heating	gain .013
Total	.019 lost
Panel not heated	gain .003
5th day—While heated for 7 hours	.052 lost
After heating	gain .017
Total	.035 lost
Panel not heated	gain .002

The panel which was heated but two hours the first day and four hours the second day—

	Gained .211
Panel not heated	" .004

In other words, heating the panel dried it about fifty times faster than it would otherwise have dried, and that in a mild atmosphere. Every painting and varnishing shop should be well furnished with steam-heating apparatus, or, if this is not possible, with a number of stoves. As stoves are usually placed, one side of a painted or varnished car or carriage dries more rapidly than another; there is need of heat on all painted sides.

The heat, however, must not be too great, and especially should it not be moist heat. A heat above 176° is probably injurious to good drying.

The Gain in Weight of Drying Oil.—We have seen that oil in darkness hardly increases at all in weight. In the light, and especially if heated, drying oil becomes from 8 per cent. to 10 per cent. heavier. Does it get this weight from the rays of light? Science has shown that these rays have no weight, that both light and heat are merely waves of motion, like the waves which spread over the surface of smooth water when we throw a stone into it. The water is no heavier for the motion, it is only heavier because of the stone. Air, however, has weight as a stone has; 100 cubic inches weigh 31 grains; the air presses upon us on all sides, because it is heavy, so that a man's body sustains 37,560 pounds, or upward of 16 tons, of pressure from the air.

Air, however, is not a simple substance; it is composed of at least three gases, nitrogen, oxygen and carbonic acid.

These are not linked together, but simply mixed together as shot, peas and potatoes might be mixed; so that while the names of these gases may be unfamiliar, every one is constantly familiar with the gases themselves. We breathe into our lungs the nitrogen and oxygen (mixed).

Air = nitrogen gas and oxygen gas mixed, 4 of N to 1 of O in every puff of pure air:

N O N N N
N N N N O

Air from the lungs would contain all the "Ns," one less "O" in every 5 "O's," and a little C, or carbonic acid, the heavy gas which causes clear lime water to turn white and milky on blowing one's breath into it. Every breath into the lungs contains 80 parts of nitrogen and 20 parts of oxygen.

The air breathed *from* the lungs contains all the nitrogen (80 parts), but only 16 of the 20 parts of oxygen: and from 2 to 5 parts of carbonic acid. The other 4 parts of oxygen we keep.

It is with the air as with some other things. We have had a large experience in it. We need only a little definite knowledge about it.

Chevreuil, a great French chemist, made the following experiment in order to prove which of the gases of the air unite with the drying oil. He painted four panels alike, one side of each with white lead, the other side with zinc white, both prepared with linseed oil. No. 1 was placed in a closed glass box containing carbonic acid. No. 2 in a glass box containing air. No. 3 was left exposed to the free air, and No. 4 was placed in contact with oxygen gas. The following table gives the results:

TABLE NO. 5.

	After 24 hours.	After 72 hours.
No. 1. Carbonic acid.	The white lead nearly set,	but without adherence to the wood.
	The zinc white	absolutely fresh.
No. 2. Limited air.	The white lead nearly dry.	Perfectly dry.
	Zinc white set but not dry.	" "
No. 3. Free air.*	White lead nearly dry.	" "
	Zinc white was set but not dry.	" "
No. 4 Oxygen gas.	The white lead perfectly dry.	
	Zinc white " " "	

Another French chemist analyzed oil before and after its drying. He found: *

Before drying	11 parts. oxygen gas.
After "	22 "
Gain in drying	11 parts of oxygen.

Otherwise there was little change in its elements, except a slight loss of carbon and hydrogen. As a rule, drying oil adds probably one-tenth to its weight by taking up oxygen from the atmosphere. It may add, however, even more, since there is no exact measure of the loss which is going on at the same time.

What does Oil lose in Drying?—Reference to tables No. 1, 2 and 3 will show that oil loses in weight, as well as gains in weight, while drying, and that this loss is least in slowly drying oil.

The comprehension of the process of this loss of weight will carry with it a better comprehension of the whole subject of drying oils. The explanation, must, however, be partly fact and partly theory, so we shall label each statement with its appropriate sign (F) or (T).*

Black oxide of iron (black scale) and red oxide (red rust) seem quite unlike, yet they are both a union of iron with oxygen gas. In the same manner different substances result from the union of oil with the oxygen of the air (F).

We have already seen that linseed oil is composed of

Linolein,

Linseed oil acid. — Glycerine ether.

Palmitin.

Palmitic acid. — Glycerine ether.

Olein.

Oleic acid. — Glycerine ether.

Part of the loss in weight of the oil comes from the loss of the palmitin and the olein, the latter especially. When considerable oxygen unites with the oleic acid, a substance results which quickly flies away (T). When less oxygen unites with the olein, a more solid substance results which does not so quickly fly away. Nevertheless, by heating the dried oil, we can drive it off from the still more solid dried linolein.

As shown in table No. 3, oil dried in sunlight and in oil dried in darkness gained:

TABLE NO. 6.

In sunlight.	In darkness.
0.529 grammes.	0.828 grammes.
heated to 176 degrees there was	
0.106 grs. lost.	235 grs. lost

respectively, that in darkness losing at least one-half more than that oil dried in sunlight.

Slowly-dried oil, therefore, contains more of the non-drying fats, and for this reason (T) seems to gain (after a long time) more in weight. In table No. 2, the quickly-drying oil weighed after 150 days 0.300 and the slowly-drying oil (under green glass) 0.485 grammes.

In the same way (by differences in drying) the drying portion of the oil (the linolein) produces different substances, as we shall see.

The Glycerine Ether.—There is also another and still more important loss of weight in drying oil. If we are so fortunate as to go to bed by the light of a tallow candle, we will observe a peculiar and sickening odor on putting out the flame and leaving the wick to smolder.

A tallow† candle is largely

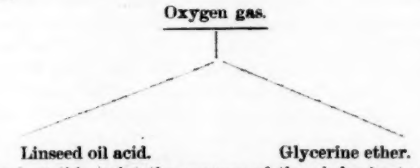
Stearine.

Stearic acid. — Glycerine ether.

By the heat, some of the glycerine is unlinked from the fat acid and changed into the unpleasant, sickening substance which our nose discovers to be in the air.

It is the same with the changes in both the not-drying and the drying parts of oil. The glycerine ether is unlinked from the fat acid and flies away. A heat of 176°—much less heat than will boil water—begins to drive off the glycerine ether from the drying oil (F).

The process of drying appears (T) to begin with the unloosening (not unlinking) of the glycerine from the oil-acid, thus:



And at this point the oxygen of the air begins to unite with the oil acid to form a varnish.

The whole process of drying appears to be the linking together of oxygen with the oil acid, and therefore plenty of pure air is absolutely necessary to dry paint and varnish.

The ventilation of a painting shop in order to get as much pure, warm air as possible without dust is a matter of the *first* importance. Abundance of light is of nearly equal importance, as we have seen. Before drying, the oil is a fluid water-like acid, the oxygen an invisible gas filling a large amount of space. After the drying, both appear together as a thin, solid, elastic varnish.

Review of the Drying of Oil.—Although our knowledge of the drying of oil is still not complete, we may profitably take a review of what we have already learned.

(1). Linseed oil is composed of

Drying oil	80 parts
Not-drying oil	20 "
	100 "

of which 8 parts is glycerine ether.

(2). Pure oil will not dry in darkness, light is necessary; and the greater the light, the more vigorous the drying.

(3). Heat is also a powerful drier of oils. Oil heated for a short time continues to dry more rapidly for hours after the heating.

(4). "Drying" appears to be the loss of glycerine ether and the gain of oxygen from the air. The glycerine appears to be *unloosened* from the oil acid, as the oxygen unites with the oil. The result of the drying is a bright, hard and elastic varnish.

(5). Much of the glycerine ether which is linked with the oil acid flies away in the drying.

(6). Some of the not-drying oil acid also flies away in drying—especially under the influence of the direct sunlight, or when the oil is heated.

100 parts of oil become	111 parts (more or less)
Heated, it loses	3 parts (more or less)
Net gain	8 parts (more or less)

[TO BE CONTINUED.]

* The analysis, as we shall see, is not a close one.

* T means a direct inference from a fact, not at all a guess.

† Composite candles are made without glycerine, and give no such odor.

RAILROAD LAW.

Iowa Railroad Aid Law.

A dispatch from Ft. Dodge, Ia., April 25, says: "The Supreme Court of Iowa holds that the statute authorizing cities and towns to vote tax-aid to railways cannot be construed to authorize more than one such tax. This will affect a good many new railroad projects in the state, and on the whole will be welcomed by the public."

THE SCRAP HEAP.

The Basic Process for Dephosphorizing.

Last Saturday, in St. Louis, Jacob Reese, of this city, closed a contract with the Harrison Wire Company, of that city, by which the latter obtains membership in the syndicate controlling the basic dephosphorizing process of making steel in this country. Mr. Reese has been in St. Louis a couple of weeks conducting the negotiations. What the terms of the contract are is not known to outside parties.

The purchase of this right by the Harrison Wire Company is, however, merely part of the preliminary arrangements for the establishment of an industry which, in scope of operation and comprehensiveness of manufacture, will have no rival in the United States, and which will also be the only one of the same character in the country. This will be the Harrison Steel Company, with main office located in St Louis, but with works situated in Illinois, at a town called Harrison, in Jackson County, a little place on the banks of the Big Muddy River, possessing advantages for the economic conduct of the manufacturing of steel, which will be hereafter detailed. The manufactory will be on an enormous scale, and some idea of its extent may be had from the statement made by the projectors of the new enterprise, that the Harrison Wire Company of St. Louis, now operating hundreds of hands, will be only a department of the Steel Company, the capital stock of which will be $3,000,000.

All the parties interested in these works have not, as yet, been named, but it is obtained from good authority that a large amount of Eastern capital is invested in the project. The St. Louis capitalists who have become interested are: Edwin Harrison, Thos. W. Fitch and Dr. J. M. Leete, who now for the most part own and control the Harrison Wire Company, and it is these gentlemen who have been for several months past carrying on the negotiations and closing contracts for the successful inauguration of the company. The incorporation, however, will take place in the course of a few days, and all particulars regarding the owners will then be made public.—*Pittsburgh Telegraph, April 29.*

A New Double-Ender Locomotive.

A new engine on the Pennsylvania Railroad is thus described by the Philadelphia *Press:* "Jumbo, as the novel steam monster was called by the *habitués* of the round-house, is as ungainly in appearance as the hero of the hour now quartered in Barnum's show, and has created more interest among railroad men than any novelty since the advent of long-legged No. 10. The engine weighs 120,400, or a little over 60 tons, about 15 tons heavier than a class "K" engine, and is fitted with 5-ft. driving wheels, with 33-in. truck-wheels under the smoke-stack, while in the rear of the driving wheels there is one 6-wheel truck, which will enable the engine to turn a very sharp curve. The cylinder is the same size as those used on the class "K" engines—and the water-tank, which has a capacity of 2,000 gallons, surrounds the entire fire-box. The engine is so constructed as to run in either direction, and has a pilot at each end, thus doing away with the use of a turn-table. This locomotive is on one frame, there being no break between the tender and the engine proper; and although the engine is a trifle shorter than the class "K" engines, yet it is at least 3 ft. higher than the average locomotive, while the cab, which is entirely closed, is about three times the size of that of other engines. The engine will be run regularly on the Paoli and West Chester accommodation trains."

Train Robberies.

A dispatch from Dallas, Tex., April 24, says: "News was received this afternoon that one of the Texas & Pacific train robbers had been captured, and it is supposed mortally wounded. He is the son of a respectable old farmer living near the scene of the robbery, and was shot in a fight with the Texas rangers. His father last night informed the rangers of the whereabouts of his wayward son, requesting his arrest, stating that he would prefer to have him an inmate of a penitentiary to being a member of a gang of robbers. It is thought the entire gang will be bagged to-night or to-morrow, as about 30 rangers have got the trail and are scouring the country. It is believed this is the same gang that robbed the Gulf, Colorado & Santa Fe train three weeks ago. The robbers attempted to wreck the east-bound passenger train between 2 and 3 o'clock this morning in the cañons of the Brazos River region, eight miles east of the place of the robbery of the night previous. They removed two rails from the track on a high trestle. The engineer discovered the absence of the rails just in time to save his train from being hurled in the cañon abyss below."

German Locomotives.

Engineering reports that Messrs. Maffei & Hartmann, of Chemnitz, have obtained an order from the Upper Italian Railway Company for some four-wheeled coupled locomotives at £52 16s. per ton, and for some eight-wheeled coupled engines at £56 per ton. Messrs. R. Stephenson & Co., of England, tendered at £80 and £88 per ton respectively. During the next four years, the Upper Italian Company proposes to place 88 additional locomotives upon its system.

Pitch of Rivets in Bridge Works.

In a suggestive paper on the pitch of rivets in wrought-iron bridges, recently read before the Cleveland Institution of Engineers by Mr. A. D. Ottewell, it is proposed to place the rivets much farther apart in the tension boom than is now common, and in the case of the bottom flange of a girder 23 ft. 4 in. long and 2 ft. deep the author, instead of putting all rivets of the same pitch or a little greater than in the top flange, would have them vary from a little greater at the ends to four times the pitch in the centre.

A Smoker Declared a Nuisance.

A Philadelphia smoker removed the cigar from his mouth on entering a horse car, but insisted on retaining it in his hand. The conductor warned him to throw it away, as the smoke from it was offensive to the women passengers, and finally ejected him by force. He sued the company for damages, but the verdict is against him, the Court charging the jury that he was a nuisance which the conductor had a right to abate.

RAILROAD GAZETTE

Published Every Friday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

THE MASTER MECHANICS' AND THE MASTER CAR-BUILDERS' ASSOCIATIONS.

The Secretary's announcement of the annual convention of the Master Mechanics' Association will be found on another page. The amendment of its constitution, which was adopted last year, fixes the third Tuesday in June, which falls on the 20th this year, as the date for holding the annual meeting. This brings the Master Mechanics' Convention a week later than that of the Master Car-Builders, as the latter is held on the second Tuesday in June.

It may not be amiss to repeat here that the master mechanics will meet this year at Niagara Falls and the car-builders in Philadelphia.

That the deliberations of these two associations have been of very great advantage to the railroad companies of the country, no one, we think, can doubt who is at all familiar with what they have done, There are, nevertheless, many railroad managers, superintendents and men occupying positions in charge of the locomotives or cars of various roads who seem to regard them with more or less distrust; and to use an expression one often hears used in the discussion of their merits, they "don't amount to anything." If this view is correct, then, of course, it is not surprising that many who otherwise would be interested keep aloof from the meetings, and refuse to become members or take any part in the deliberations. But does the opinion or the feeling indicated above, and which is entertained by some, really represent the actual condition of things? That neither of the associations is just what it ought to be, or what those who take part in its deliberations may desire, is of course true. But the point of view from which the question should be regarded is that which would be indicated by the question, whether, under all the conditions which exist, any better organizations are possible. If it is desirable that the master mechanics and car-builders of our railroads should meet together and deliberate on and discuss questions pertaining to the construction and operation of the locomotives and cars, then the associations must consist of the persons occupying such positions. It may be that they do not possess the qualifications which they should have, but we must take them as they are.

It is a practical question whether it is desirable that master mechanics and car-builders should meet together and deliberate on the interests that are submitted to their care. If it is, then these officers must be taken as we find them. It is impossible to make new or different men for such places to form an association of. The best associations that are possible must be made out of the material at hand. It may be that the latter is not of the best quality and that the structure which can be made of it will have grave defects, but that does not alter the factthat it is wiser to do the best we can with the poor material than to do nothing. Every car-builder has probably been compelled to build cars of green timber of various degrees of goodness or badness. Now if a person in charge of car construction should refuse to build any cars because the lumber was not so good as he wanted, it would be an analogous case to those railroad officers who will have nothing to do with the associations referred to because some of their members are green or ignorant, others prejudiced, some are wind-bags and others humbugs. All this may be true, but it does not alter the fact that it is the part of wisdom to do the best we can with the material at hand rather than do nothing. If we wait until we can find ideal people who possess ideal qualifications for members of organizations of the kind under discussion, we will wait until the end of our lives, and do nothing.

But some one may say that the above illustration is not a parallel one to the facts as they exist. They may contend that while they would be willing to make either cars or associations of unseasoned or knotty or imperfect material, they are unwilling to use that which is so rotten that its use will be certain to result in disaster. To this it may be said that it is not true of either of the associations that any corruption has ever crept into them which has defeated their usefulness. That fungi of various kinds have from time time attached themselves to some of the timbers may be true, but the sunshine of publicity has in all cases, it is believed, withered and destroyed their capacity for evil. Part of the duty of every mechanic in building a car or other structure is to see that no part of it is decayed; and it is this kind of help that those who stand outside of the associations and only find fault *do not* give. They could accomplish much more if they would come inside and give a hand in shaping the structure into the best possible form, and help to keep out decay, and at times act as pillars to support the organization.

If the fault-finders would only undertake to organize such an association as they think should be formed, they would, it is believed, soon discover the groundlessness of their complaints.

There is another feeling, though, which arrays itself against organizations of this kind, which is difficult to describe clearly. The engineer of the Hudson River tunnel revealed that he entertained this kind of feeling when he testified that in his opinion "a knowledge of mathematics dwarfed a man's mind." But there are railroad financiers and managers who go even further than this, and, perhaps half unconsciously, feel that any thorough or unusual amount of knowledge of mechanical construction warps a man's judgment to such an extent that he is no longer a safe adviser in such matters. It is of course true that there are men with a great deal of knowledge of mechanical construction united with unsound judgment, which latter makes it unsafe to intrust them with important responsibility. The feeling referred to, though, is that the judgment of a person which would otherwise be sound becomes vitiated by a thorough acquaintance with mechanical principles and details, or, in the language of Mr. Haskins, they "dwarf his mind." Of the Master Mechanics' and its kindred association persons holding such opinions will talk somewhat like this: "If we send our man there he will only get a lot of new fangled ideas, and come home and want to spend our money by putting them into practice." Probaby he might, but these conservative philosophers never seem to think of the money their man may waste by not knowing the most improved and cheapest ways of doing things, the most durable material, the best labor-saving machinery, and the thousand details and principles which all have a place in railroad operation. A thorough knowledge of the principles and details of mechanical construction, like all other knowledge, broadens and does not narrow a man's mind. The knowledge which a man gets by intercourse and discussion with others does more than anything else can to correct his errors, remove his prejudices, and set him on the sound path of right thinking.

There is another view of the matter which railroad managers would do well to pay some heed to. At the recent session of the Connecticut Legislature, a law was passed compelling all railroad companies in the state to have all freight cars built or bought equipped with automatic couplers, and to use a single dead-block so as to have a clear space between the cars of 12 in. when they come together, and in case the draw-bar should be broken. Other bills of a similar character have been introduced into the New York Legislature, and, we believe, in Ohio. In Connecticut the law was enacted in obedience to public clamor, the people having become indignant at the frequent accidents from coupling cars. The fearful mortality and the loss of life and limb among railroad employés have been pointed out often in these pages. Public indignation is quite sure to be aroused about it, and it may then result in legislative interference in the various states, of every degree of wisdom and unwisdom, if the railroad companies themselves do not take some measures to protect their employés. There can be no doubt that railroad managers are often indifferent about the whole matter, and that others are unwilling to co-operate with any general movement for the improvement of rolling stock. It will not be surprising, then, if the people should assume the attitude toward the railroads "if you won't protect your employés, we will compel you to do it."

The two associations which will soon hold their meetings are the only organizations through which any co-operation in this matter is now possible. It would, therefore, seem to be to the advantage of those whose interests are there represented to take part and assist in bringing about such improvements as will at least save lives and limbs, and possibly others which will save money.

Last year it was suggested that the two associations should meet at the same place and at the same time, the sessions of the one to be held in the morning, and those of the other in the afternoon, and there seems to be a very common feeling among those interested in the two associations that some closer relation between them is desirable.

To the proposition that the two conventions should be held simultaneously, the objection was made that there is a considerable number of roads on which the duties of the persons in charge of the locomotive and the car departments are such that it is difficult for both of them to be absent at the same time. It would seem that this difficulty would be overcome by holding both meetings at the same place and during the same week. Thus the master-mechanics might meet on Tuesday and Wednesday, and the car-builders on Thursday and Friday, with arrangements for a joint meeting on Wednesday evening for the consideration of matters in which both associations are interested. The sessions of each association now usually occupy three days, but by having the reports printed before the meeting, and having only the shorter ones read, and adopting other time-saving devices, as much could be accomplished in two days as has heretofore been done in three. A preliminary meeting of the Master-Mechanics' Association could be held on Monday evening, at which the Treasurer's and Secretary's reports could be heard and acted upon, and other routine business be transacted, so that the session of Tuesday morning would have a clean calendar to begin with. The Car-Builders' Association could hold an evening session on Friday or overflow into Saturday if necessary.

The change, or rather addition, to the present organizations which would be required to bring this about would be very slight, and was indicated by the action of the Master Mechanics' Association last year. There was then some conflict in the time appointed for holding the meetings of the two associations, and in order to guard against this in future a committee was appointed "to confer with a similar committee which the Master Car-Builders' Association should be asked to appoint." Unfortunately, notice of this action was not received by the Car-Builders' Association until after their adjournment, so that no action could then be taken with reference thereto. The movement indicates, though, how the two associations could be united for joint action and yet each retain its entire independence of the other. All that would be needed would be that each should appoint a standing committee of conference, the two committees to form a joint committee to arrange for meetings and to bring the business of one association before the other when that is desirable. The joint committee would simply be a medium of communication from one association to the other.

Each would retain its present organization under its own constitution and by-laws, would elect its own officers and expend its own money—in fact, do as it does now, excepting that it would have the joint committee as a sort of parliamentary telephone, through which the one association could transact business with the other. When the standard axle, journal-bearing, journal-box, etc., were under consideration, agreement of the two associations was brought about by means of a joint committee, and probably there will often be occasion in future to use the same means to accomplish similar ends. The fact that this method has worked very satisfactorily heretofore, and that it is very simple and involves no action which cannot easily be abandoned, is all in its favor.

The prospect is that both meetings will this year be unusually interesting, and it is, we think, very desirable that all railroads should be represented at them.

THE LAKE SHORE REPORT.

No railroad report needs analysis and comment less than that of the Lake Shore & Michigan Southern. The few pages (this year six) of the President's report with which it begins give not only an easily intelligible account of the business of the year and of the results of it, but a complete history of the business since the formation of the company. The road, however, is so important, so affected by lake as well as by railroad competition, so much influenced by railroad wars, and so important in its effects on other railroads that its reports deserve and receive unusual attention from the railroad officers of other companies, as well as from financiers, investors and speculators.

The tables of the report show that the traffic of both kinds was larger in 1881 than ever before. In freight (ton miles) there was an increase of 9¼ per cent. over 1880, of 18½ per cent. over 1879, and of 87 per cent. over 1877. The passenger traffic was 18 per cent. more than in 1880, and 47 per cent. more than in 1879—certainly a very large growth, especially when we consider that in 1880 the traffic was large without example. Were this growth an index to the general growth of production and traffic in the country, it would be most encouraging. But on this road, more than most others, the amount of traffic is affected by the rates charged. Large as are the rail shipments of freight from Chicago to Buffalo, when navigation is open they are usually but a fraction of the lake shipments. Make the rail rates low enough, and the railroads get most of the freight that otherwise would go by lake. So when the railroad war in the last half of 1881 made through rates 10 to 15 cents per 100 lbs., the railroads *from lake ports* were usually able to carry as much as their rolling stock could move. They then gained traffic, not because there was more freight to carry, but because they secured a large share of the lake business. Thus we see that the shipments of grain from Chicago *by lake* were 56,660,000 bushels in 1881, against 91,777,000 in 1880; while the rail shipments were 63,400,000 in 1881, against 59,717,000 in 1880. With rates well maintained throughout the year, the roads crrried 42 per cent. of the shipments; with six months of railroad war and rates below cost, they carried 53 per cent. of the shipments.

The report gives the east-bound and west-bound freight movement separately, and it appears from this that, though the average east-bound rate fell from 0.747 to 0.592 cent (more than a fifth), the east-bound traffic did not increase, but fell off a little (nearly 2 per cent.). The gain in west-bound freight, however, was enormous—28⅜ per cent.—and being made with a decrease of but 14 per cent. in the average rate, there was an increase in the revenue from freight in that direction. But the decrease in earnings from east-bound freight was nearly $2,000,000, and in all freight, in spite of an increase of 9¼ per cent. in traffic, the earnings fell off $1,417,307, or 10 per cent., most of which, but not all, must be charged to the railroad war. This decrease was 2.8 per cent. on the company's stock.

The change in the proportions of freight in the two directions has been very great of late years. No longer ago than 1878 the west-bound freight was but 25.8 per cent. of the whole; in 1880 it was 39.2 per cent., and in 1881, 42½ per cent. This is largely, but by no means wholly, due to the increase in coal shipments, carried in competition with the lake vessels. Coal shipments were only 216,000 tons in 1870; they rose to 695,000 in 1875, to 1,053,000 in 1879, and were 1,592,000 last year. The freight movement is now so nearly equal in the two directions that at times there is a scarcity of cars for west-bound freight. This evenness is favorable to a reduction of the cost per ton per mile, it not being necessary to haul so many empty cars as formerly.

Passenger traffic is increased much more than freight traffic by very low rates, such as ruled in the last half of last year. On this road there was an increase of 18 per cent., though until 1880 there had been no increase in passenger traffic of this road since the company was formed in 1870. Nearly two-thirds of the whole increase, however, was in through passengers between Buffalo and Chicago, this travel being 43 per cent. greater than in 1880, while all other passenger traffic increased but 9 per cent., and this included not only local travel, but all passengers to and from Cincinnati, St. Louis, Indianapolis, etc., who pass over only that part of the Lake Shore east of Toledo or Cleveland. The Buffalo-Chicago passengers made 31½ per cent. of the total travel (passenger mileage) last year. This movement was swelled by the heavy immigration, but more by the low rates, as may be seen by the fact that the increase in first and second-class through passengers was nearly 50 per cent.; in emigrants 26½ per cent.

The immense gain in passenger traffic more than balanced the great reduction in rates, and there was an increase of 10 per cent. in passenger earnings. But nearly three-fourths of this gain was from local travel, though the increase in through travel was nearly twice as great as in local travel. The local rates were scarcely changed; the average through rate fell from 1.532 to 1.220 cents—more than a fifth, though the passenger war was shorter than the freight war.

The increase of 9¼ per cent. in freight traffic was carried with an increase of 5⅛ per cent. in freight-train mileage, the average freight-train load having increased from 247½ to 262½ tons—the latter the largest reported so far by any road. The increase of 18 per cent. in passenger traffic was carried with an increase of 14 per cent. in mileage of passenger trains, the average train load having increased from 69 to 72—both unusually large passenger train loads, and made so probably by the heavy immigrant traffic, carried with several hundred in a train. The very low rates seem not to have had much effect on the average train load.

The increase in traffic, equivalent to about 11 per cent. in the total, was carried with an increase of 8½ per cent. in working expenses, but with a decrease of 4½ per cent. in gross earnings, from which results the great decrease of $1,638,394, or 19.7 per cent., in net earnings, equivalent to $3.26 per share of stock. There having been some question as to the adequacy of the changes for maintenance of cars and locomotives, we have treated that subject at length in another article.

The effects of the railroad war were probably felt rather more in the first quarter of this year than at any time last year; in a less degree they are felt also in the second quarter, and the bad crops have reduced traffic since February very greatly; on the other hand, there has not been the terrible winter weather of last year to contend with. The low lake rates compel low through rates on most traffic, and it is not probable that the profits of this road and those situated like it are very satisfactory now or will be this half-year. But there is a better prospect than ever before that rates will be maintained; local traffic and travel are heavy, emigrant traffic enormous and carried with profit, and there is a fair prospect that all through freight will be heavy in the last half of the year and carried at remunerative rates—at least it is extremely probable that the business of the road will be much more profitable in the last half of this year than in the last half of 1881. By next year the road will have to compete with two new roads at Chicago, and with the New York, Buffalo & Chicago for the local traffic on about 250 of its 1,177 miles of road, including that of Cleveland and Erie. The probable effect on the Lake Shore, we think, is exaggerated; though if the new roads desire, they can doubtless bring on a railroad war which will destroy the profits of through traffic, not only on the Lake Shore but on other roads. The new lines, however, will desire to make profits as well as the old ones, and they are not likely to pursue a warlike policy unless there is something to be gained by it.

MARCH EARNINGS.

Our table of railroad earnings in March has returns from 58 different railroads with 46,814 miles of road this year, which is about 45 per cent. of the total now in operation, and 5,683 miles (13.7 per cent.) more than the same companies were working in March last year. These roads earned in the aggregate $26,598,223 this year, which is $4,016,146 (17.8 per cent.) more than last year, and their average earnings per mile *increased* from $548 to $568, or 3.6 per cent. Last year the 52 roads reporting showed a decrease of 6.1 per cent. in earnings per mile in March, and in 1880 the 53 roads reporting had an increase of 20 per cent. compared with 1879. Last year March was a very unfavorable month to many roads, but in 1880 it was generally an unusually favorable one. This year shows a slight improvement over last.

Of the 58 roads reporting, only nine had smaller total earnings this year than last, but 19 had smaller earnings per mile. The large increases in earnings per mile this year are 38 per cent. on the Burlington, Cedar Rapids & Northern, 34½ on the Central Iowa, 60 on the Chicago & Grand Trunk, 53 on the Chicago, Milwaukee & St. Paul, 43½ on the Chicago, St. Paul, Minneapolis & Omaha, 49 on the Des Moines & Fort Dodge, 33⅛ on the Green Bay, Winona & St. Paul, 46½ on the Iowa lines of the Illinois Central, 34½ on the Kansas City, Lawrence & Southern Kansas, 98 on the Milwaukee, Lake Shore & Western, 75 on the Northern Pacific, 34½ on the St. Paul, Minneapolis & Manitoba and 63 on the Wisconsin Central,—truly a long list, but, all but one, are roads much interrupted by snow blockades last year in March, and many are roads whose earnings per mile then and this year were very light. There are no such large decreases; the most important are 36½ per cent. on the Mobile & Ohio, 30½ on the Denver & Rio Grande, 27 on the Texas & Pacific, 22½ on the Nashville, Chattanooga, and St. Louis, and 21 on the Iron Mountain.

The roads carrying much trunk-line traffic generally show some decrease in earnings per mile, or a very small increase, with the exception of the Chicago & Grand Trunk, which had about twice its usual proportion of traffic during the month. The Southwestern and most of the Southern roads show a falling-off, and indeed nearly nine-tenths of the whole increase of earnings was on the Western roads. Western roads, however, predominate in the list. Of 16 Northern roads whose lines are wholly, or almost wholly, east of Illinois, only two show a decrease of earnings, it is true, but with an increase of 301 miles of road there is an increase of but $309,509 in the aggregate earnings, and they may be said to have done only just about as well as last year in March. Of ten Southern roads, four have smaller earnings than last year, and in the aggregate they have a *decrease* of $51,400 in earnings, in spite of the great increase of 1,102 miles in length of road, so that they have a considerable decrease in earnings per mile. This leaves us 32 Western roads (including the Wabash and the Indiana, Bloomington & Western), which, with 4,230 more miles of road, have earned $3,758,037 more money than in March last year. It is the Western roads, then, that make the best showing, and this is partly because they were much troubled with snow last year. In view of the light crops, they have, as a whole, done positively well, and doubtless, especially if net earnings are compared, much better than their Eastern connections, which have had to carry a reduced traffic at less than last year's rates.

Below are given the earnings per mile in March of many railroads for six successive years, so far as reported:

March Earnings per Mile of Road, 1877 to 1882.

	1877.	1878.	1879.	1880.	1881.	1882.
Ala. Gt. South	.....	.....	$114	$165	$216	$236
Atch., Top. & S. F.	$267	$376	572	557	540	649
Burl., C. R. & North.	199	303	258	383	263	362
Cairo & St. Louis	142	131	127	206	281	222
Central Iowa	222	274	287	472	269	362
Central Pacific	698	580	574	586	660	681
Ches. & Ohio	...	342	304	512	525	473
Chicago & Alton	510	527	483	746	631	687
Chic. & East. Ill.	356	377	422	555	553	596
Chic. & N W.	440	527	514	595	421	517
Chic., Mil. & St. P.	332	469	357	382	241	369
Chic., St. P., Minn. & Om.	....	.....	362	356	265	386
Cin., Ind., St. L. & C.	551	576	507	661	637	693
Cleve., Akron & Col.	187	194	178	231	246	307
Denver & Rio Grande	183	309	....	499	723	504
Des M. & Ft. Dodge	....	....	200	305	185	278
Flint & Pere Marq.	....	....	352	498	502	568
Hannibal & St. Jo.	553	549	726	740	604	578
Ill. Cen., in Ill.	514	492	469	527	490	585
Ill. Cen., in Iowa	284	332	328	380	268	393
Ind., Bloom. & West.	....	461	380	548	346	372
Int. & Gt. North.	217	194	237	223	358	310
K. C., Ft. Scott & G.	...	....	393	510	403	456
Lake Erie & West.	....	....	....	205	246	240
Louisville & Nash.	434	450	434	470	515	521
Minn. & St. Louis	....	....	283	307	192	238
Mo., Kan. & Tex.	315	301	286	419	402	397
Mobile & Ohio	263	315	322	333	456	289
Nash., Chat. & St. L.	400	411	428	373	454	345
N. Y. & New England	....	....	552	652	671	648
Northern Central	904	841	1,025	1,274	1,389	1,320
Northern Pacific	....	90	169	185	226	395
Pennsylvania	1,427	1,399	1,457	1,751	2,034	2,032
Peoria, Dec. & Ev.	.....	.....	132	236	209	253
Phila. & Reading	1,078	824	1,107	1,608	1,610	1,620
St. L., Alton & T. H.—						
Main Line	....	444	365	582	680	539
Belleville Line	612	550	632	781	567	608
St. Louis & San Fran.	339	305	284	374	443	417
St. L., Iron Mt. & So.	512	502	516	659	1,028	812
St. P., Minn. & Man	....	....	....	399	434	584
Scioto Valley	...	185	246	280	288	312
Texas & Pacific	400	363	339	484	400	292
Union Pacific	....	....	...	578	485	509
Wabash, St. L. & P.	....	....	....	517	453	393

Here we find that the number of roads that had smaller earnings per mile in March this year than in a previous year were:

17	out of 44	smaller in	1882	than in 1881.
19	" 44	"	"	1880.
7	" 39	"	"	1879.
6	" 32	"	"	1878.
4	" 27	"	"	1877.

A considerable number of roads have earned less this year than last, still more less than in 1880, and this in a time when expenses have been generally increasing; but in comparison with previous years, nearly all the roads are earning more now, and as 1880 was an extraordinarily favorable year, and even 1881 in comparison with all those preceding was far above the average—generally next to the most profitable—we have reason to be satisfied with the results this year.

The roads with the largest and smallest earnings per mile in March last were:

Largest.	Per mile.	*Smallest.*	Per mile.
Pennsylvania	$2,032	Green Bay, W. & St. P.	$162
Reading	1,620	Houston, E. & W. Texas	175
Northern Central	1,320	Toledo, Cin. & St. L.	182
Iron Mountain	812	Central Branch U. P	206
Cin., Ind., St. L. & Chic.	693	K. C., Lawrence & S. Kan.	214
Chicago & Alton	687	Cairo & St. Louis	222
Central Pacific	681	Ala. Great Southern	236
Atch., Topeka & S. F.	649	Minneapolis & St. Louis	238
New York & New Eng.	648	Lake Erie & Western	240
Missouri Pacific	632	Peoria, Dec. & Evansville	253
Belleville Line	608	Mil., Lake Shore & West.	269

It will be noticed that there is a great difference be-

tween the earnings per mile of the Northern Central and those of the roads next below. The gap would be filled if all roads reported, but very few of the roads with very large earnings make monthly reports. The whole table would have a very different appearance if we had returns from such roads as the Boston & Albany, the New York, New Haven & Hartford, the Erie, the Pittsburgh, Fort Wayne & Chicago, the Lake Shore, the Baltimore & Ohio and the like. The table of roads with the lightest earnings shows that some of the roads that report great gains still have very small earnings. Some of them are new roads which have hardly begun to develop a traffic; but several of them are old enough, and earn little because there is little for them to earn.

For April, the comparison will be with a favorable month last year, the traffic delayed by the winter and March snows then coming forward on many roads at such a rate that our table showed an increase in earnings per mile of 29 per cent. in 1881 over 1880, although in 1880 there was an increase of 14.3 per cent. over 1879. To do as well as last year, then, will be doing extraordinarily well for the average road; some Northwestern roads, however, suffered much even in April last year, having branches snowed up until May, and the St. Paul & Sioux City lines of Chicago, St. Paul, Minneapolis & Omaha, in spite of an increase of 30 per cent. in mileage, had a decrease of 50 per cent. in earnings then.

THE LAKE SHORE MAINTENANCE EXPENSES.

Lake Shore stock of late has become the leading speculative stock on the New York Exchange, the sales in a single day sometimes being as much as 50,000 shares, or one-tenth of the whole issue, while the price within a few weeks has fluctuated between 120 and 99. When there is so much speculation in a stock there is much talk about it, the speculators having great interests depending upon current opinion on the value of the property. With regard to Lake Shore, there has been more than the usual amount of talk, especially since Mr. Vanderbilt recently publicly announced his opinon that the stock was worth 120, that it was sure to earn 6 per cent. in almost any year, and that if the last half of the year should turn out as favorable as he expected, it would earn 8 per cent. this year. This announcement was followed by the advance of the stock from about 109 to about 120 and the declaration of a 2 per cent. dividend for the first quarter of the year—a dividend which Mr. Vanderbilt's own language would lead one to suppose had not been earned during that quarter—and then by the rapid fall of the stock to 99 and a fraction less last Saturday.

When the stock fell, there was much said as to the deceptive nature of the statement of the profits of 1881 made at the time of declaring a dividend just before the end of the year, on which we commented at some length in our issue of Jan. 6. This statement showed that the surplus profits after paying interest, rentals and all fixed charges amounted to $8.03 per share in 1881, against $11.88 in 1880. We were able, by the help of other statements made during the year, to show that in 1881 $4.33 of this profit was made in the first half of the year, and in the second half $3.70, against $5.88 in 1880, this second half including the time of the railroad war. Though the decrease in this half was $2.18 per share, or 37 per cent., the profits still seemed very large for a time of railroad war and after the worst harvest the country has had for many years.

We now have the full report for the year 1881, an abstract of which we publish on another page. It is one of the clearest of railroad reports that is published, for the understanding of stockholders, and does not require comment to make it intelligible. Early copies were obtained by some stock operators, and it was given out by them that the figures of the report were much more unfavorable than the official statement made last December, and on Sunday the New York *Tribune* published some of the entries in the income account, which it said had been wrongly transferred from operating expenses, and which if properly charged would have lessened the surplus available for dividends by $674,948, which would reduce the profit per share from $8.03 to $6.78—a very important difference. These charges are $537,948 for new cars, and $137,024 for the cost of 22 new locomotives, less the amount received for an equal number sold.

Now the propriety of charging the cost of new rolling stock to working expenses or capital depends entirely on this fact: whether the purchases were *additions* to the equipment, or whether they took the place of cars or locomotives worn out. If the latter, the expenditure was purely for maintenance, and should be charged to working expenses; but if the new stock was an addition to the equipment, its cost is rightly chargeable to capital, as much as the cost of a new road.

Now a comparison of the lists of rolling stock owned by the company at the end of 1880 and 1881 shows that during 1881 there were added 38 locomotives, 1,155 box cars, 431 stock cars, 410 platform cars, 398 coal cars, and smaller numbers of some other cars, making an addition in cars of all kinds of 2,407.

At the prices current last year and the latter part of 1880 (when doubtless many of them were ordered), these additions must have cost as much as $1,700,000 or $1,800,000, and might have cost $1,900,000 or $2,000,000. The charge to equipment in the balance sheet is increased $1,772,000. If this represents the whole cost of the additions, then the charges for new cars in the income account certainly should have gone to expenses; the charge for $137,024 for 22 new locomotives in excess of the receipts for 22 old ones *might* be legitimate though they did not represent an addition to the *number* of engines. The locomotives bought now are usually much larger and more powerful machines than those built 20 years ago or so and which now are being replaced. One of the new ones might be equivalent to two of the others when they were new. Maintenance is strictly chargeable with the amount which would buy a new engine like the old one. The language of the entry, however, "22 new locomotives, $218,281, less proceeds of sale of 22 old locomotives, $81,256.86," indicates that the old locomotives were not credited with what they would have cost new, but only with what they actually sold for, and the $3,693 each which they brought would pay only for a very small machine.

If the company always charged strictly to capital all expenditures for additions to the property, we would know that these charges did not represent additions simply because they were not charged to equipment in the balance sheet; but the practice of the company does not enlighten us, for it has heretofore for several years added largely to its equipment without making any charge to capital account. From 1875 to 1880 inclusive no addition was made to the charge for equipment, though in that time 3,425 freight cars were added to the stock. In the last three years, as the President's report says, the additions to equipment have cost $3,693,434, and the only charge to capital under this head has been the $1,772,000 entered last year. The balance has been paid for from net earnings, with the exception of $850,000 which was realized as the premium on second-mortgage bonds and Chicago Union Stock Yards stock sold last year.

The fact that over a million dollars of net earnings were invested in equipment in 1879 and 1880, however, does not justify the removal of a charge of $674,949 for renewals from expenses in 1881. The charge is not made to capital, it will be noticed, but is made a charge against income like some back taxes and dividends, and similar pure additions to the stock of cars made in previous years.

It should be said, however, that if these were renewals, they must have been extraordinary ones: for in spite of these separate charges, there is an increase in all the items of repairs of equipment—10 per cent. in repairs of locomotives, 6¼ per cent. in repairs of passenger cars, and 8 per cent. in repairs of freight cars. The increase in train mileage was 5⅞ per cent., so that the charges for repairs do not seem inadequate. And generally it may be said of the itemized statement of expenses in 1881, that there is no indication of a restriction of expenditures for maintenance under the heads where this can be done easily. Every maintenance item but one shows an increase over 1880, as will be seen below:

Lake Shore Maintenance Expenses for Four Successive Years.

Repairs—	1881.	1880.	1879.	1878.
Bridges	$139,608	$215,942	$144,173	$176,019
Buildings and fixtures	313,471	194,853	173,644	179,988
Fences, crossings, etc	63,605	47,604	24,395	19,351
Total structures.	$516,684	$458,399	$342,212	$375,358
Rail renewals	414,264	298,308	.....	.....
Tie renewals	288,259	174,779	.....	.....
Repairs road	963,303	883,585	.....	.....
Total permanent way	$1,665,826	$1,356,672	$1,173,467	$1,306,043
Repairs—				
Locomotives	698,705	635,025	550,018	531,275
Passenger cars	220,364	206,643	654,509	675,370
Freight cars	677,468	627,188		
Total equipm't.	$1,596,537	$1,468,856	$1,204,527	$1,206,645
Total maint'nce	3,779,047	3,283,927	2,720,206	2,618,046
Train miles	10,615,000	10,030,570	9,740,320	8,767,042

Thus we find that under every general head the expenses for maintenance were larger in 1881 than in any other of the four years. For maintenance of structures the expenditures were 12½ per cent. more than in 1880, 51 per cent. more than in 1879, and 37½ per cent. more than in 1878. For maintenance of permanent way they were 23 per cent. more than in 1880, 42 per cent. more than in 1879 and 27½ per cent. more than in 1878.

For maintenance of equipment they were 8.7 per cent. more than in 1880, and 33 per cent. more than in 1879 and 1878.

The increase in the mileage of freight and passenger trains has been 5.8 per cent. over 1880, 9 per cent. over 1879, and 22 per cent. over 1878.

The traffic train mile is usually the nearest approach to a unit of expense; but there seems to have been great irregularity in the allowances for switching, etc., on this road, for the *locomotive* mileage shows very different variations, as follows:

1881.	1880.	1879.	1878.
15,880,737	13,586,207	12,966,275	11,609,370

where 1881 shows an increase of 19 per cent. over 1880, 22½ per cent. over 1879, and 37 per cent. over 1878, much the largest increase having been in 1881, when the report shows an increase of less than 6 per cent. in traffic train mileage. A change in the method of calculating freight train mileage may have made the figures smaller in 1881 than by the method previously used. If we adopt the figures for passenger and freight train mileage given in the report of the performance of locomotives, which agree with those of the rest of the report for years previous to 1881, but not for 1881, we have the traffic train mileage in the latter year 11,261,831, instead of 10,615,000, and the increase over 1880 12¼ instead of 5⅞ per cent. For purposes of comparison probably the larger figure is correct, but the smaller one probably represents the actual mileage of trains, and should be used in all calculations except those of the locomotive department, the movements of engines in switching out cars and making up trains not being a part of the true traffic train movement, but a necessary expenditure of work in connection therewith, the same as if done by horse power. But whichever statement of train mileage we accept, it remains true that the charges for new engines and cars in the income account if transferred to maintenance would make an addition such as could not possibly be caused by the business of the year. They would make the increase in repairs and maintenance of locomotives 31½ per cent., and that in repairs and renewals of cars 72½ per cent., with an increase of less than 11 per cent. in the traffic. If then these were strictly renewals, and properly chargeable to maintenance, they were operating expenses, to be sure, but expenses chiefly chargeable to the business of years previous to 1881.

Whether the increase in maintenance expenses on the Lake Shore was adequate or not, we may judge also somewhat by the reports of other companies for the same year. The Pennsylvania Railroad reported a *decrease* of 9 per cent. of maintenance of car expenses on its "Pensylvannia Railroad Division" in 1881, an increase of 11 per cent. on the United New Jersey roads, and of 1½ per cent. on the Philadelphia & Erie. The directors' report, which alone has yet been published, includes maintenance of locomotives with enginemen's wages, coal, etc., under the head of motive power expense, so that we cannot give it separately, but the increase in "motive power" on the Pennsylvania Railroad Division was 9½ per cent.: the increase in all working expenses 10 per cent., against 8½ per cent. on the Lake Shore. Train mileage is not given in the Pennsylvania directors' report, but its traffic increased 17 per cent. in passenger and 15½ per cent. in freight in 1881: the Lake Shore's 18 per cent. in passengers and 9½ per cent. in freight—by our usual method of reckoning our passenger mile equivalent to two ton miles, the Pennsylvania's total traffic increased 15⅞ per cent., with an increase of 10½ per cent. in expenses; and the Lake Shore's total traffic increased 10⅞ per cent., with an increase of 8½ per cent. in expenses.

The Pittsburgh, Cincinnati & St. Louis shows an increase of 4½ per cent. in maintenance of car expenses and of 20½ per cent. in total expenses, with an increase of 11⅞ per cent. in train mileage, but of only 5½ per cent. in traffic. The New York, Pennsylvania & Ohio, with 26½ per cent. more traffic, had 8 per cent. larger expenses: the Illinois Central carried an increase of 9 per cent. in traffic with 8 per cent. more train miles and 13½ per cent. greater expenses.

The maintenance expenses are those which it is possible to put off or to some extent reduce by charges to construction: but it is precisely the maintenance expenses which show the largest increase on the Lake Shore in 1881. The increase in them is $495,120, or 15 per cent.: the increase in all other expenses, $365,204, or 5 per cent.

The indications are, then, that the charges for maintenance entered under expenses in 1881 do represent the repairs and renewals due to the business of that year, and that the $675,000 charged to locomotives and cars in the income account, if it represented no additions to the property, was chargeable to the expenses of previous years.

Crop Prospects.

The New York *Times* last week published reports concerning the acreage and condition of the crops from nearly every state in the Union, which have considerable value so far as the crops already in the ground are concerned, the chief of which are winter wheat and cotton. The condition of winter wheat appears to be less promising than a few weeks ago, but the injury suffered meanwhile does not affect large proportion of the crops. The states east of Ohio do not promise well, but their yield is unimportant; Maryland and Virginia have a good growth, and throughout the South, where there has been a great increase in the acreage, the crop promises well, and is already past most of the dangers to which it is subject. But even doubling the acreage in the South adds but a very small percentage to the acreage of the country, and still less to its production, as six or eight bushels to the acre is a good average yield in the cotton states, and hardly half a crop in the wheat-growing states. The winter wheat marketed in the East and Europe is produced chiefly in Ohio, Michigan, Indiana, Illinois, Missouri and Kansas; some also in Kentucky and Tennessee. In most of this country wheat came out after the mild winter (usually unfavorable to this crop) in excellent condition, but in Illinois and parts of Ohio a considerable portion was winter-killed or destroyed on low lands by water. Generally it seems that the loss was nearly total on the areas affected, leaving the upland wheat in good condition, and where this is the case the ground is plowed and another crop will occupy the ground. In the Ohio Valley warm weather in the latter part of February and in March caused a very rapid and early growth, and this was followed about the middle of April by very severe frosts, which are said to have ruined a large part of the crop in this district in Ohio and Indiana and probably in Illinois. Some reports say that nearly all the wheat was killed in entire counties, but the result seems not yet definitely ascertained. If the wheat is killed, it will in most cases be replaced with corn. How far north of the Ohio the injury extends does not appear, but in the latitude of Indianapolis and Terre Haute the crop is reported to be in magnificent condition, and it does not appear that more than a small part of the acreage is affected. Michigan shows an exceptionally good condition, with nearly the same acreage as last year; in Ohio there was a decrease probably. In Indiana an increase of 2 per cent. is reported; in Illinois a decrease of 10 per cent. In Missouri 2 per cent. less acreage is reported, but the condition is said to be almost universally magnificent; and in Kansas the condition is said to be as good as in Missouri, but there the acreage is 22 per cent. less than last year. In Kentucky a considerable part of the crop has suffered by April frosts like that on the north side of the Ohio, but in Tennessee the condition is all that could be wished, and the acreage reported 20 per cent. more than last year.

The general conclusion is that there is some decrease in acreage, especially in the wheat exporting states, but that the condition is very much better *than at harvest* last year, and not quite so good as in 1880, when the yield was perhaps the largest ever known. The crop has still some dangers to meet; but it must be remembered that winter wheat now is grown chiefly in southerly latitudes (except in Michigan), and the time of harvest is comparatively near in the southern half of Ohio, Indiana, Illinois and Missouri, and in Kansas. Protracted drought ruined the crop after this time last year; rust, untimely rains about harvest time, and insects may yet damage it; but it has escaped more than half of its dangers. Some damage is almost sure to be done in some places by the causes enumerated before the grain is threshed, but as things stand now, the prospect is of a crop larger than the average.

Concerning spring grains, only part of the country can report as yet. One thing is noticeable and peculiar, however, and that is the intention throughout the South and corn-growing districts to sow an extraordinarily large area with oats. This is due to the fact that the stock of corn on hand is insufficient to keep the stock till the next crop is grown, and the planters and farmers grow oats, which ripen some months earlier, to take the place of corn. This is especially the case in the South, where the high prices of corn make a very severe draft on the planter's resources.

Spring wheat is grown chiefly in Wisconsin, Minnesota, Dakota, Iowa and Nebraska and on the Pacific Coast. Wisconsin is sowing or is preparing to sow wheat as much as last year; in Minnesota the spring opened early and little sowing was done in March, but since cold and wet weather have prevented work until quite recently, and now sowing is progressing in the North and South alike, where the ground is dry enough. The southern part of the state, formerly famous from wheat-growing, is abandoning that crop, which has for several years been poor, and much less profitable than corn or stock-growing. A large increase in acreage is expected in the Red River valley and other northwestern counties, but it will probably not exceed the decrease further south. There will, however, be a considerable increase in the aggregate acreage of all crops in Minnesota. There are very few data for a judgment from Dakota, but in the Red River valley and along the Northern Pacific it is expected that the acreage will be 25 per cent. greater than last year. Of the immense area further south, including all the territory on the lines of the Chicago, Milwaukee & St. Paul and the Chicago & Northwestern, no report is given. In Iowa, taken as a whole, probably less wheat will be sown than last year, but in some southern counties much more was sown, and it was put in very early and is in excellent condition. Iowa has sometimes produced more wheat than any other state, but it is not a good wheat state, and last year the average yield was but six bushels an acre. Preparations are made for a great increase in other crops, which a long season for spring plowing has made practicable with little increase in the number of laborers. The chief increase will be in corn. Wheat is generally sown in Nebraska, but the area sown is smaller than last year, the farmers finding corn more certain and profitable.

On the Pacific Coast the prospects are generally good, there having been late rains, which have saved some of the California counties from failure. In California (where the crop is now nearly made, not being liable to the dangers common to rainy countries if the spring and winter rains have been sufficient), it is thought that the yield may be as large as last year, which was good, but less than in 1880. In Eastern Oregon and Washington, where the conditions are nearly the same as in California, but the season is much later, there have been sufficient rains so far, but May rains are needed there to make the crops. There is a large increase of acreage in the Northern Pacific and the new lines of the Oregon Railway & Navigation Company.

The increase in spring wheat acreage in Dakota, Washington and Oregon will probably equal the decrease in the other states, and the product may well exceed that of last year, though the yield was then very poor only in Southern Minnesota, Iowa and Nebraska, the Pacific Coast having a very large crop, and Northern Minnesota and Dakota a fair one. It is probable that there will be a very large increase in Dakota south of the Northern Pacific, from which we have no definite reports.

Most of the corn north of the Ohio remains to be planted, but the preparations are for a great increase in acreage in most of the corn-growing states. The South has planted more than ever before; in the great corn states there will probably be a somewhat larger acreage than last year in Ohio, a larger increase in Indiana, a very large increase in Illinois, Iowa and Nebraska, and especially in Kansas, in which latter state it has started well. In Missouri an increase of 5 per cent. is reported. This is of all our crops the least likely to fail; but a shortage of no less than 500,000,000 bushels was caused by drought last year, and in a few seasons there has been great damage by early frosts. It would appear from these reports that the chief part of the increase of acreage under cultivation in the United States this year will be devoted to corn; but it may be necessary to make very considerable modifications of these estimates, for the crop remains to be planted in the states which grow most corn. With a small stock of hogs, and the South preparing to grow its own grain to an extent never attempted before, it may very well happen that the corn states will have an exportable surplus much greater than ever before, and as it is the bulkiest of grains, it will afford more freight then any other crop.

The testimony is uniform of a large decrease in the acreage of cotton; one report claims that South Carolina will plant as much as last year, and a slight increase is claimed for Florida, which does not produce much. In the other states the estimates generally are of a reduction from 10 to 20 per cent. There is no estimate for Texas, however. The land taken from cotton is devoted to grain. It should be remembered that there was a very large increase in cotton acreage last year. Of course, it is too early to estimate the crop of cotton, which has enemies to encounter every day now until it is picked. This is true of nearly every other crop, except, perhaps, wheat in California. All we can know now is the acreage and present condition. Of all crops now planted, the condition now is on the average favorable, and nothing has yet occurred which will prevent our having larger crops of spring wheat, oats and corn than ever before. The acreage of winter wheat being smaller than last year, and the present average condition not so good as the exceptionally good condition in 1880, we are not likely to produce quite as much as in the latter year; though, with everything favorable hereafter, we may; and the large decrease in the acreage of cotton makes it improbable that the crop this year will be quite so great as that of 1880, which was much the largest ever known; yet that, too, is possible, the more so because, though there is a large decrease from the acreage of 1881, there cannot be very much less than in 1880.

Estimates of acreage will be made by the Agricultural Department from much more numerous data, and these we shall await with much interest, as affording the best criterion of the extent to which agriculture has been extended during the past year of immense immigration and great activity in other industries.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Augusta & Knoxville.—Extended from Bradley, S. C., north to Greenwood, 14 miles.

Chicago, Milwaukee & St. Paul.—The *Hastings & Dakota Division* is extended from Frederick, Dak., to Ellendale, 12 miles. The *Stillwater Branch* is completed from Hastings, Minn., north to Lakeland, 18 miles.

Chicago & West Michigan.—Extended from New Buffalo, Mich., south to Laporte, Ind., 15 miles.

Cincinnati & Eastern.—Extended from Irvington, O., east to Newport, 10 miles.

Florida Tropical.—Track laid from Ocala, Fla., southward 30 miles.

Ft. Worth & Denver City.—Completed to a point forty-five miles northwest of Ft. Worth, Tex., an extension of 20 miles.

Galveston, Harrisburg & San Antonio.—Completed to a point two hundred and ninety miles eastward from El Paso, Tex., an extension of 55 miles. On the eastern end track is laid on the branch from Eagle Pass Junction south to Eagle Pass, 45 miles.

Indiana, Bloomington & Western.—The *Eastern Extension* is completed by laying track between Newcastle, Ind., and Troy, O., 68 miles.

Missouri, Kansas & Texas.—The *Southwestern Extension* is completed to Taylor, Tex., an extension of 15 miles.

Pennsylvania.—Track is laid on the *Redstone Branch* from Brownsville, Pa., east 8 miles.

Pensacola & Atlantic.—Track laid from Milton, Fla., west 10 miles.

St. Louis, Ft. Scott & Wichita.—Extended from Yates Centre, Kan., westward to Toronto, 15 miles.

Shenandoah Valley.—Extended south by west from a point eight miles south of Waynesboro, Va., 72 miles.

This is a total of 407 miles of new railroad, making 2,283 miles thus far this year, against 906 miles reported at the corresponding time in 1881, 1,096 miles in 1880, 391 miles in 1879, 267 in 1878, and 269 miles in 1877.

Big Locomotives.

We have so frequent inquiries about the size and weight of the largest locomotives that we give herewith the weight and dimensions of the heaviest freight and passenger engines that we know of that are in use in this country:

	Name of Railroad or Builder.	Kind of Locomotive.	Size of cylinders.	Diameter of driving wheels.	Weight on driving wheels.	Total weight.
Passenger Locomotives.	Reading Railroad	Fast express	21 × 22 in.	68 in.	*44,250 lbs.	86,200 lbs.
	" "	Class K	18 × 24 "	78 "	*45,300 "	82,700 "
	Pennsylvania Railroad	Fontaine locomotive	16 × 24 "	.....	†44,000 "	83,000 "
	Baldwin Locomotive Works	Fast express	18 × 24 "	78 "	‡35 to 45,000 lbs.	85,000 "
	Boston & Albany	" "	18 × 22 "	66 "	*56,000 lbs.	80,000 "
	Pennsylvania	Tank locomotive	17 × 24 "	60 "	.....	**120,400 "
Freight Locomotives.	Reading Railroad	Consolidation	20 × 24 "	50 "	88,500 lbs.	102,600 "
	"	Twelve wheels coupled	20 × 30 "	46 "	101,000 "	101,000 "
	Atchison, Topeka & Santa Fe	Consolidation, tank	17 × 24 "	48 "	‡100,000 "	‡115,000 "
	Central Pacific	Mogul, tank	16 × 24 "	48 "	88,000 "	.....

* On four wheels. † On two wheels. ‡ Estimated. ** Reported weight.

We have to take a newspaper statement of the last-named passenger locomotive, which is to be used on suburban trains of the Pennsylvania Railroad out of Philadelphia, and is said to weigh 120,400 lbs.

THE ENLARGED WELLAND CANAL is now open, and on April 22 the propeller John C. Gault, of the Wabash Line, passed through it. This vessel being 233 ft. long and of 33 ft. breath of beam, with capacity for 42,000 bushels of corn when drawing 13 ft. 6 in. of water, and for 31,000 bushels when drawing 11 ft. 6. in., which is all that the canal will permit until a little more work is done. This is not a large vessel, as lake vessels are ranked now, but it is a type of the propellers still most used on the lakes, and is immensely larger than the vessels that the old canal could pass. The passage from lake to lake was made in 16 hours.

This is the beginning of what may prove to be the most important rival of the railroads and the Erie Canal that they have ever had; but it is only the beginning. The vessels which pass through the Welland Canal will not go down the St. Lawrence, but transfer their cargoes to vessels of another class at Kingston, as the smaller vessels passing the canal heretofore have always done. The improvement of the St. Lawrence, so as to permit lake vessels to go through to Montreal, or so that a large class of transfer vessels may be used on that river, is necessary to the greatest economy in transportation by this route.

Very little effect can be produced by the canal at present, because it is not available to any great extent for the transportation of grain to the Middle and Eastern States, which are now consuming by far the larger part of the grain shipped down the lakes. Its effect will be felt, if at all, on the export grain, of which there is now very little. It is at least possible that it will have a great effect on that trade, making Montreal the terminus of the cheapest water route from the West. Whatever effect it has will be felt most by the Erie Canal. Until after harvest we should expect to see the advantages of the new canal shown more by increased receipts at Oswego and Ogdensburg (whence they could be distributed to the interior of New York and New

England) than in shipments to Montreal, which exports most of its receipts.

It must be said that Buffalo, the canal interest, and the railroads east of Buffalo do not seem to be much alarmed by the prospect of the competition of the enlarged canal. Great stress is laid on the fact that the most economical vessels for the grain traffic now are much larger than those the enlarged canal will pass—carrying usually 50 per cent. more. The question is whether the saving between Lake Erie and the sea by the enlarged canal, over the cost of the Erie Canal, will be greater than that by the larger vessels between Chicago and Buffalo. But further, there is nothing to prevent transfers from large vessels to smaller ones at Port Colborne, the Lake Erie end of the Welland Canal, any more than at Buffalo; and with the St. Lawrence route so improved as to permit vessels carrying 40,000 bushels to pass from Lake Erie to Montreal, there would be no more handling than by the Erie Canal route to New York, and a much quicker passage. In that case it seems certain that it will cost much less to carry by water to Montreal than to New York, and that no possible improvement of the Erie Canal can prevent this. But, though the distance to Liverpool is less from Montreal than from New York, and with the present light shipments from Montreal, the rates are usually about the same, because vessels going to Montreal have to take cargoes for what they can get, it is not at all probable that if as much export grain were offered at Montreal as at New York it would get as low ocean rates. New York has an enormous import trade, which, as experience has shown, it is almost impossible to divert; and it is the chief destination and starting point of transatlantic travel and immigration. Moreover, its harbor is open the year round, and Montreal's little more than half the year. This, we imagine, will be found to be the chief drawback of the St. Lawrence route in the grain export trade.

THE GREAT WESTERN RAILWAY SHAREHOLDERS have welcomed Sir Henry Tyler's proposition for the Grand Trunk to unite with their company and give them 3 per cent. on their ordinary shares, and at the half-yearly meeting last week there was so large a majority of the proxies in favor of fusion with the Grand Trunk that the directors offered to resign and permit the election of a board in favor of that policy. Only three directors go out yearly, and a majority of the board could not have been obtained for at least another year if the old board had not been inclined to submit to the wishes of the majority. The new board consists chiefly of directors and officers of English railroad companies, with Lord Bury as President.

It must not be supposed that consolidation has been effected; the action of the meeting only decides that the Great Western will unite with the Grand Trunk in an effort to have it authorized, which can only be done by the Dominion Parliament. It will probably take a year to obtain such authority, and judging from the tone of the Canadian press, it is not likely that it will be granted at all. But meanwhile Sir Henry Tyler has succeeded in turning out the old Great Western board and bringing in a new board which we may suppose to be friendly to him and to give great weight to his advice in fixing the policy of the road; that is, hoping to make the two companies one, they will probably try to work them as one so far as possible henceforth.

The result may be important on the Great Western's relations with its present eastern and western connections. It is an intermediate link which they can dispense with. The Michigan Central traffic can all be sent over the Canada Southern, and this is by far the largest part of the Great Western's through business. But the Great Western has a large system of roads which collect local traffic in Western Ontario, and so also has the Grand Trunk. They command this traffic west of Buffalo, and the line to New York which does not give them a good share of the through business to and from Detroit, Chicago and Milwaukee is not likely to get much of this local traffic. It has been a standing grievance of the Grand Trunk that it could not get a share of the New York business for its Buffalo-Chicago line. The New York Central will have little to do with it, and the Erie though apparently needing a short Buffalo-Chicago connection like this, has interchanged but little traffic with it. Probably when the New York, West Shore & Chicago and the New York, Lackawanna & Western are completed, it can make more satisfactory arrangements, especially if it has the 823 miles of the Great Western of Canada and the 189 of the Detroit, Grand Haven & Milwaukee which the Great Western controls.

BRITISH RAIL EXPORTS TO THE UNITED STATES are usually lightest in January and February, and then increase rapidly. But this year the exports to this country are very large in January (larger than before since August) and have fallen off since. They have been for each of the first three months of the year for three successive years:

	1880.	1881.	1882.
January	15,291	7,368	27,267
February	12,770	14,799	23,178
March	14,528	25,720	22,265
Three months	42,589	47,887	72,709

It might be supposed that the recent fall in the price of rails—about one-sixth for steel during the three months—would tend to decrease the imports, but this can hardly have had much effect yet, as the rails exported are largely contracted for some months before they are shipped. More rails have been used, doubtless, this year than last in these three months, simply because last year during these three months the weather was such that it was almost impossible to lay track on most of the railroads of the country, and our record shows that twice as many miles of new road was laid this year. The fall in the price of rails itself, however, indicates a less pressing demand for the future, and our own works before the end of the year may be fully and easily able to supply the whole demand. Indeed, at present prices it does not seem possible to import steel rails Were there no demand from other countries, perhaps prices abroad would fall as much as they have here: but the Board of Trade returns of British exports show that the exports to other countries are much larger this year than for a long time previous. For the three months they were 111,356 tons this year, which is a little more than the total exports to all countries in 1881 and 1880. The cessation of exports to America will be severely felt now by the British rolling mills, but if it leaves them with as much work as they had last year, it is not likely that they will, as a consequence, reduce their price to $20 or $22 a ton for steel rails, which now seems to be the sole condition of their finding a market in this country. With iron it may be different. We do not now seem inclined to take much iron at any price, and when steel is cheap, this disposition strengthens. So far this year our takings from Great Britain were sufficient for 190 miles of iron track laid with 56-lb. rails, and for 636 miles of steel; last year our imports were equivalent to 306 miles of iron and 238 miles of steel, while in 1880 iron predominated still more—287 miles against 199 of steel. But we are still the only important customer for British iron rails. The exports to all other countries together in the first quarter of this year were equivalent to only 68 miles of track and to 5¼ per cent of the total rail exports to those countries.

THE PENNSYLVANIA RAILROAD DIVIDEND declared last Monday is 4 per cent., payable May 29, and the stockholders, moreover, have the privilege of subscribing for new shares to the amount of 8 per cent. of their holdings, a privilege worth 1¼ per cent. at the price of the stock last Monday. This will bring up the amount of stock to $83,886,570—nearly the same as the New York Central's ($89,428,300) and the Erie's ($84,575,300). The resolutions of the board giving the right to subscribe do not say for what purpose the additional capital of $6,213,820 is required, but the company has been making quite extensive improvements to the property, and it is desirable that additions to its capital should be in shares rather than bonds. The announcement seems to have had no effect on the price of the stock.

There is some criticism of the action of the directors, in view of the fact that the result of the operations in the first three months of this year, as we showed last week, is a decrease in the available surplus equal to 2 per cent. on the stock; but it must be remembered that the aggregate result in 1881, one-half of which was unfavorable, compared with 1880, was a surplus equivalent to more than 3 per cent. on the stock after paying 8 per cent. dividends—that is, it is not necessary to make as large profits as in 1881 in order to pay as large dividends. If it is said that profits for the rest of the year may continue to show a decrease, and will not be enough for another such dividend, we may answer that the next half-year must take care of itself; the stockholders are entitled to their profits for the last half year; if less is made hereafter, they must receive less. There is not, however, it seems to us, a prospect that the next half-year will show a decrease compared with last year. Doubtless through traffic will not be very profitable until after June or July; but after June the comparison will be with the time of railroad war and of light crops last year. With tolerable crops we have a right to expect that through freights and passengers on the trunk lines will be very much more profitable this year than last, after June, and there is nothing yet to indicate a decline in the very heavy local traffic.

CHICAGO RAIL SHIPMENTS eastward for the week ending April 22 were 30,272 tons, against 33,232 tons the week before, 68,110 the corresponding week of last year, and 37,522 in the corresponding week of 1880. Thus, though the shipments of the week this year were 55½ per cent. less than last year, they were but 16⅘ per cent. less than in 1880, when also lake navigation was open. The shipments of the week this year, however, were smaller than in any previous week since May, 1880, except the first week of May last year, when a strike of yard switchmen prevented the making up of trains in Chicago.

Of the shipments this year the Chicago & Grand Trunk had 14.6 per cent., the Michigan Central 19.3, the Lake Shore 15, the Fort Wayne 33.6, the Pan-handle 8.7, and the Baltimore & Ohio 8.8 per cent. The Chicago & Grand Trunk's share is the smallest in six weeks, but still much above its average previously. The two Vanderbilt roads have 34.3 per cent. of the whole, against 49 per cent. in the old pool; the two Pennsylvania roads have 42.3 per cent. of the whole, against 33 in the old pool.

For the week ending April 29 the shipments billed from Chicago (not including those billed from points west *through* Chicago) were 22,357 tons, against 21,969 the week before and 59,216 the corresponding week of last year. Grain and flour made up 17,465 tons of the total this year, against 53,320 last year; the Grand Trunk this year had 20 per cent. of the flour, but only 10 per cent. of the grain. The light shipments doubtless yield much more profit than the heavy January shipments, which were mostly taken for less than one-half the current rates—some of them for one-third of these rates, but compared with the last two years at this time the profits are much smaller.

NORTHWESTERN GRAIN RECEIPTS have suddenly become large, comparing well in the last half of April with those of any previous year, though in March they were unusually light. The shipments from lake ports—chiefly from Chicago, Milwaukee and Toledo—have also greatly increased; but the Atlantic receipts remain very small, and the exports are comparatively trifling, though grain is now carried to Europe for almost nothing—sometimes for less than nothing. Evidently there is a home demand for the grain, and this, by the way, insures an unusually large proportion of the shipments to the railroads. It is not probable that the large shipments will continue long. Farmers take advantage of the seasons when they cannot plow or sow to market their surplus grain, and prices are so high that they are not likely to keep as much as usual until after they have planted their corn. But for the present the Northwestern railroads are having a much heavier grain traffic than before since the middle of February, and the lines to the East, in spite of the fact that the lakes and canal are open and are carrying at very low rates, are having a fair traffic at rates that yield a profit.

THE MASTER MECHANICS' CONVENTION will be held this year at Niagara Falls, beginning Tuesday, June 20. Mr. Setchel, the Secretary, in a letter published on another page, gives a pressing invitation to all master mechanics to attend, including those who are not members, and holds forth the promise of an interesting programme.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Chicago, Rock Island & Pacific, annual meeting, at the office in Chicago, June 7. Transfer books close May 1.

New York Central & Hudson River, annual meeting, at Albany, N. Y., June 7. Transfer books close May 6.

Canada Southern, annual meeting, in St. Thomas, Ont., June 12. Transfer books close May 6.

Illinois Central, annual meeting, at the office in Chicago, May 31. Transfer books close May 13.

Railroad Conventions.

The *Eastern Railroad Association* will hold its annual meeting at the Windsor Hotel, New York, May 10, at 1 p. m.

The *Railway Car Accountants' Association* will hold its annual meeting in Boston, beginning on Tuesday, May 23, at 10 a. m. The Hotel Vendome has been selected as headquarters for members.

The *General Time Convention*, which was to have been held April 12, has been postponed by general consent, and will be held in Cleveland, O., on call of the Chairman.

The *Western Association of General Passenger and Ticket Agents* will hold its next meeting in Chicago, May 10.

The *Master Mechanics' Association* will hold its annual convention at Niagara Falls, beginning on June 20.

The *Master Car-Builders Association* will meet in annual convention in Philadelphia, June 13.

Dividends.

Dividends have been declared as follows:

Pennsylvania, 4 per cent., semi-annual, payable May 29, to stockholders of record April 29.

Atchison, Topeka & Santa Fe, 1½ per cent., quarterly, payable May 15.

Boston & Maine, 4 per cent., semi-annual, payable May 14.

Boston, Concord & Montreal, 3 per cent., semi-annual, on the preferred stock, payable May 15.

Ft. Wayne & Jackson, 2 per cent., semi-annual, on the preferred stock, payable May 4.

Manchester & Lawrence, 5 per cent., semi-annual, payable May 1.

Nashua & Lowell (leased to Boston & Lowell), 4 per cent., semi-annual, payable May 1.

Boston & Providence, 4 per cent., semi-annual, payable on demand.

Richmond & Danville, 2 per cent., quarterly, payable May 15. Transfer books close May 10.

American Institute of Mining Engineers.

The following preliminary announcement of the Colorado meeting has been issued:

"The next meeting of the Institute will be held in Colorado, beginning in Denver on Monday, Aug. 21, 1882. A week or ten days will probably be spent in the state. A subsequent notice will give the detailed programme of the meeting and the arrangements which may be made with railroad companies for excursion rates to Denver. It is necessary that the Secretary should have in good time the names of the members and associates who expect to attend the meeting, with the number of ladies who will accompany them.

"It is desirable that there should be a large number of papers presented at this meeting, and members are requested to send the titles of their papers to the Secretary as soon as they can."

The Secretary is Prof. T. M. Drown, and his address is at Easton, Pa.

Western Passenger Agents' Association

Mr. George H. Daniels, Secretary of the Western Association of General Passenger and Ticket Agents, gives notice that the next meeting will be held at the Grand Pacific Hotel in Chicago, Wednesday, May 10.

The Executive Committee presents for discussion the following subjects:

"The limits on tickets, or the abolition of the old style of limited tickets, and the substitution therefor of a continuous-passage train ticket. Some uniform plan for conducting the theatrical business. Can we not agree upon uniform rates per mile for theatrical parties; also, for special baggage—sleeping or other cars? What, if any, reduction should be made for advance agents? Should theatrical people be allowed a greater amount of baggage free than other passengers—if so, how much?

"The baggage question: Can we not adopt some uniform rule regarding excess baggage which shall apply locally as well as on through business? Can we not have some uniform release from loss or damage to baggage while in our possession? Can we not adopt a rule which can be enforced in regard to the weight of baggage which shall be checked free? Can we not charge storage on baggage after holding it twenty-four or forty-eight hours? Shall we check baggage on a limited ticket to a point short of the destination of said ticket? The tourist business: Can we not adopt some uniform plan like that of the Cook excursions for conducting this business? Can we not agree to abolish the system of personally conducting excursions? Will each road protect its connections from unfair discrimination in the event of their declining to pay commissions? Cannot some rule be adopted which will be uniform and just in regard to ticketing passengers through by long and circuitous routes to important points reached by direct and short lines? The question of round trip land exploring tickets: Shall they be issued to more than one point in each state and territory through which the road requesting them passes?

Such other matters as may properly come before the meeting."

Mr. Daniels adds:

"These subjects are of vital importance to all the lines in this Association. And from the fact that some of them were discussed at the meeting of the National Association, I have been requested to bring them up at this meeting, it being the opinion of a number of the more prominent lines in interest that it may be possible for this Association to take such action as will eventually lead to the general adoption of a portion of the reforms suggested."

Pool Meetings in New York.

Last week meetings were held five days at Mr. Fink's office, and two or three meetings on some days, with regard to the division of traffic. Tuesday there was a meeting of the Chicago roads, at which it was agreed to call for statistics for several years past, including the shipments received from western roads at junctions just south of Chicago (Washington Heights and Blue Island), and by the Joliet Cut-off of the Michigan Central, by which the latter receives an enormous amount of traffic from the Chicago & Alton and the Illinois Central.

Wednesday the western connections of the trunk lines conferred with regard to a division of passenger earnings. They agreed to make a contract similar to that of the trunk lines, but based generally on their passenger traffic in 1881 instead of 1880. The division is to be from March 1, and for the period of five years. Two meetings of the auditors of the trunk lines were held to agree upon the method of carrying out the trunk-line contracts—the reports and accounts to be rendered, etc. Copies of all way-bills received with freight from the western connections of the trunk lines are to be sent to Mr. Fink's office, and these will form a check on the reports of traffic rendered. It was agreed that no rebate vouchers should be audited unless they had first been submitted to Mr. Fink and approved by him.

There has also been a meeting of the roads interested with regard to dividing the Detroit shipments, which have never yet been pooled. It was agreed to do this, but little progress was made towards making arrangements for a division.

The passenger agents also met to consult with regard to a provision of the new penal code of New York, which took effect May 1, which provides a penalty for the selling of railroad tickets by any except authorized agents of the companies, which will prevent ticket brokerage.

ELECTIONS AND APPOINTMENTS.

Atchison, Topeka & Santa Fe Leased Lines.—At meetings held recently the following officers have been chosen for the auxiliary and controlled companies of the Atchison, Topeka & Santa Fe: *New Mexico & Arizona.*—President, Wm. B. Strong; Vice-President and General Manager, C. C. Wheeler; Secretary and Assistant Treasurer, Edward Wilder; Treasurer and Assistant Secretary, S. Lothrop Thorndike. *Pueblo & Arkansas Valley.*—President, Wm. B. Strong; Vice-President and General Manager, C. C. Wheeler; Secretary and Treasurer, M. D. Thatcher; Assistant Treasurer, G. L. Goodwin; Assistant Secretary, E. Wilder. *Canon City Coal Co.*—President, C. C. Wheeler; Vice-President, Alden Speare; Secretary and Treasurer, M. D. Thatcher; Assistant Treasurer, Edward Wilder; Assistant Secretary, B. F. Rockafellow; Manager, E. G. Savage; Superintendent, W. E. Thomas. *Trinidad Coal & Coking Co.*—President, Wm. B. Strong; General Manager, C. C. Wheeler; Treasurer and Assistant Secretary, E. Wilder; Secretary and Assistant Treasurer, G. L. Goodwin; Superintendent, E. G. Savage. *Kansas City, Topeka & Western.*—W. B. Strong, President; C. C. Wheeler, General Manager; E. Wilder, Secretary and Assistant Treasurer, Topeka; G. L. Goodwin, Treasurer and Assistant Secretary. *Pleasant Hill & DeSoto.*—W. B. Strong, President; C. C. Wheeler, General Manager; E. Wilder, Secretary and Assistant Treasurer, Topeka; G. L. Goodwin, Treasurer and Assistant Secretary. *Elk & Chautauqua.*—W. B. Strong, President; C. C. Wheeler, Vice-President and General Manager; E. Wilder, Secretary and Assistant Treasurer, Topeka; G. L. Goodwin, Treasurer and Assistant Secretary. *Kansas City, Emporia & Southern.*—Warren Sawyer, President; W. B. Strong, Vice-President; C. C. Wheeler, General Manager; E. Wilder, Secretary and Assistant Treasurer, Topeka; G. L. Goodwin, Treasurer and Assistant Secretary. *Marion & McPherson Extension.*—W. B. Strong, President; C. C. Wheeler, General Manager; E. Wilder, Secretary and Assistant Treasurer, Topeka; G. L. Goodwin, Treasurer and AssistantSecretary. *Marion & McPherson.*—W. B. Strong, President; C. C. Wheeler, Vice-President and General Manager; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer and Assistant Secretary. *Wichita & Southwestern.*—W. B. Strong, President; E. Wilder, Secretary and Assistant Treasurer, Topeka; G. L. Goodwin, Treasurer and Assistant Secretary; C. C. Wheeler, General Manager. *Florence, Eldorado & Walnut Valley.*—Alden Speare, President; W. B. Strong, Vice-President; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer and Assistant Secretary; C. C. Wheeler, General Manager. *Rio Grande, Mexico & Pacific.*—W. B. Strong, President; C. C. Wheeler, General Manager; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer; W. W. Griffin, Assistant Secretary. *New Mexico & Southern Pacific.*—Wm. B. Strong, President; M. A. Otero, Vice-President; C. C. Wheeler, General Manager; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer; W. W. Griffin, Assistant Secretary. *New Mexican.*—W. B. Strong, President; C. C. Wheeler, Vice-President and General Manager; E. Wilder, Secretary and Asst. Treasurer; G. L. Goodwin, Treasurer; W. W. Griffin, Assistant Secretary. *Las Vegas Hot Springs Co.*—W. B. Strong, President; C. C. Wheeler, Vice-President and General Manager; G. L. Goodwin, Secretary and Treasurer; E. Wilder, Assistant Secretary and Assistant Treasurer; C. C. Wheeler, General Manager; A. A. Robinson, Superintendent; Fred Harvey, Hotel Manager. *Cowley, Sumner & Ft. Smith.*—I. T. Burr, President; C. C. Wheeler, Vice-President and General Manager; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer and Assistant Secretary. *Harvey County.*—W. B. Strong, President; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer and Assistant Secretary. *Wellington & Western.*—W. B. Strong, President; G. R. Peck, Vice-President; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer and Assistant Secretary. *Kansas City & Olathe.*—W. B. Strong, President; C. C. Wheeler, Vice-President and General Manager; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer and Assistant Secretary. *Atchison City Elevator.*—W. B. Strong, President; C. S. Tuckerman, Treasurer; E. Wilder, Secretary; C. G. Rolfe, Superintendent, Atchison. *Osage Carbon Co.*—W. B. Strong, President; L. Severy, Manager; E. Wilder, Treasurer and Assistant Secretary; G. L. Goodwin, Secretary and Assistant Treasurer; R. Craig, Superintendent. *Topeka Equipment Co.*—G. C. Lord, President; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer and Assistant Secretary. *Topeka Western.*—W. B. Strong, President; F. G. Dexter, Vice-President; C. C. Wheeler, General Manager; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer and Assistant Secretary. *Atlantic & Pacific Interoceanic.*—At a meeting of the corporators in New York, May 3, the following officers were elected: President, Nathaniel P. Banks; Vice-President, John I. Waterbury; Secretary, Charles J. Canda; Treasurer,

RAILROAD EARNINGS IN MARCH

Name of Road.	Mileage. 1882.	1881.	Inc.	Dec	P.c.	Earnings. 1882.	1881.	Increase.	Decrease.	P. c.	Earnings Per Mile. 1882.	1881.	Inc.	Dec.	P. c.
						$	$	$	$		$	$	$	$	
Ala. Gt. Southern	290	290	.....	....	.....	68,885	62,499	6,386	.....	10.2	238	216	22	.....	10.2
Atchison, Top. & S. F.	1,790	1,690	120	....	7.2	1,161.000	90?,000	259,000	.....	28.7	649	540	109	.....	20.2
Buffalo, Pitts. & West	205	205	.....	....	.....	61 544	51,863	9,681	.....	18.4	300	253	47	.....	18.4
Bur., Ced. Rap. & No.	620	564	56	....	9.9	224,107	148,551	75,556	.....	50.7	362	263	99	.....	38.0
Cairo & St. Louis	146	146	.....	....	.....	32,376	41,036	.....	8,660	21.1	222	281	.....	59	21.1
Central Iowa	244	190	54	....	28.4	89,697	51,268	38,429	.....	75.3	362	269	93	.....	34.5
Central Pacific	2,916	2,590	326	....	12.6	1,987,000	1,709,637	277,263	.....	16.2	681	660	21	.....	3.2
Ches. & Ohio	442	435	7	....	1.7	208,981	228,481	.....	19,500	8.5	473	525	.....	52	9.9
Chicago & Alton	847	840	7	....	0.8	581,483	529,915	51,568	.....	9.7	687	631	56	.....	8.9
Chi. & Eastern Ill.	232	220	12	....	5.5	138,286	121,637	16,649	.....	13.7	596	553	43	.....	7.8
Chi. & Gd. Trk	335	335	.....	....	.....	184,933	115,691	69,242	.....	60.1	552	346	206	.....	60.1
Chi., Mil. & St. Paul	4,215	3,800	425	....	11.2	1,561,000	916,989	644,011	.....	70.2	369	241	128	.....	53.3
Chi. & Northwestern	3,280	2,800	480	....	17.1	1,696,566	1,178,795	517,771	.....	44.0	517	421	96	.....	22.9
Chi., St. P., M. & O.	1,050	950	100	....	10.5	405,779	251,649	154,130	.....	61.2	386	265	121	.....	43.7
Cin., Ind., St. L. & Chi.	300	300	.....	....	.....	208,066	191,005	17,061	.....	8.9	693	637	56	.....	8.9
Cin., N. O. & T. Pac.	336	336	.....	....	.....	199,567	187,402	12,165	.....	6.5	594	558	36	.....	6.5
Cleve., Akron & Col.	144	144	.....	....	.....	44,140	35,418	8,722	.....	24.8	307	246	61	.....	24.8
Denver & R. G.	1,062	551	511	....	92.9	535,055	398,493	136,562	.....	34.3	504	723	.....	219	30.3
Des Moines & Ft. D'ge	84	84	.....	....	.....	23,386	15,550	7,836	.....	49.0	278	185	93	.....	49.0
Evansv. & T. Haute	121	115	6	....	5.2	64,828	57,927	6,901	.....	11.9	536	504	32	.....	6.4
Flint & Pere Mar.	345	318	27	....	8.5	195,888	159,588	36,300	.....	22.7	568	502	66	.....	13.1
Gr. Bay, Win. & St. P.	220	220	.....	....	.....	35,566	26,590	8,976	.....	33.3	162	121	41	.....	33.3
Hannibal & St. Jo.	292	292	.....	....	.....	168,798	176,356	.....	7,558	4.3	578	604	.....	26	4.3
Houston, E. & W. Tex	104	88	16	....	18.2	18,215	12,180	6,035	.....	49.8	175	138	37	.....	26.6
Ill. Cen., Ill. lines	918	918	.....	....	.....	537,338	449,963	87,375	.....	19.4	585	490	95	.....	19.4
Iowa lines	402	402	.....	....	.....	158,033	107,826	50,207	.....	46.5	393	268	125	.....	46.5
Ind., Bloom. & West.	555	555	.....	....	.....	266,235	192,085	14,150	.....	7.4	372	346	26	.....	7.4
K. C., Ft. S. & G.	320	305	15	....	4.9	146,000	123,000	23,000	.....	18.7	456	403	53	.....	13.1
K. C., L. & So. Kan.	384	384	.....	....	.....	82,000	61,000	21,000	.....	34.4	214	159	55	.....	34.4
Lake Erie & Western	386	386	.....	....	.....	92,589	94,926	.....	2,237	2.5	240	246	.....	6	2.5
Long Island	335	320	15	....	4.7	140,365	129,992	16,373	.....	12.6	437	406	31	.....	7.6
Louisville & Nash.	2,060	1,840	220	....	11.9	1,073,745	947,959	125,786	.....	13.3	521	515	6	.....	1.2
Mil., L. S. & West.	280	250	30	....	12.0	75,268	33,998	41,272	.....	121.4	269	136	133	.....	97.8
Minn. & St. Louis	360	225	135	....	60.0	85,808	43,210	42,598	.....	98.6	238	192	46	.....	24.3
Mo. Pacific lines:															
Central Branch	387	300	87	....	29.0	79,651	79,204	447	.....	0.5	206	264	.....	58	21.6
Int. & Gt. Northern	775	623	152	....	24.4	240.459	224,069	16,390	.....	7.3	310	358	.....	48	13.4
Mo., Kan. & Tex.	1,190	880	310	....	35.2	472,048	433,343	38,705	.....	9.0	397	492	.....	95	19.3
Mo. Pacific	880	700	180	....	25.7	556,120	513,982	42,138	.....	8.2	632	734	.....	102	13.9
St. L., I. M. & So.	720	685	35	....	5.1	585,008	704,002	.....	118,994	16.9	812	1,028	.....	216	21.0
Texas & Pacific	1,140	800	340	....	42.5	332,911	319,928	12,983	.....	4.1	292	400	.....	108	27.0
Mobile & Ohio	528	506	22	....	4.3	152,651	230,916	.....	78,265	33.9	289	456	.....	167	36.6
Nash., Chatta. & St. L.	467	467	.....	....	.....	161,005	207,710	.....	46,705	22.4	345	454	.....	109	22.4
N. Y. & N. England	396	316	80	....	25.3	256,674	212,019	44,655	.....	21.0	648	671	.....	23	3.4
Northern Central	326	326	.....	....	.....	430,194	452,906	.....	22,712	5.0	1,320	1,389	.....	69	5.0
Northern Pacific	972	722	250	....	34.7	384,000	162,984	221,016	.....	135.6	395	226	169	.....	74.8
Ohio Central	231	231	.....	....	.....	63,557	49,647	13,910	.....	27.8	275	215	60	.....	27.8
Pennsylvania	1,925	1,890	35	....	1.9	3,912,293	3,844,304	67,989	.....	1.8	2,032	2,034	.....	2	.01
Peo., Dec. & Evansv.	254	190	64	....	33.7	64,364	39,644	24,720	.....	61.9	253	209	44	.....	21.1
Phila. & Reading	994	994	.....	....	.....	1,610,089	1,600,568	9,521	.....	0.7	1,620	1,610	10	.....	0.7
St. L., A. & T. H., M. Li'e	195	195	.....	....	.....	105,124	132,572	.....	27,448	20.6	339	680	.....	143	20.6
Belleville Line	121	121	.....	....	.....	73,621	68,565	5,056	.....	7.3	608	567	41	.....	7.3
St. Louis & San Fran.	660	592	68	....	11.5	274,956	262,050	12,906	.....	4.9	417	443	.....	26	5.9
St. P., Minn. & Man.	910	740	170	....	23.0	531,004	320,962	210,042	.....	65.4	584	434	150	.....	34.6
Scioto Valley	128	100	28	....	28.0	39,869	28,816	11,053	.....	38.1	312	288	24	.....	8.3
Tol., Cin. & St. L.	395	285	110	....	38.6	71,736	48,586	23,150	.....	47.6	182	170	12	.....	7.1
Union Pacific	3,720	3,450	270	....	7.8	2,226,832	1,674,860	551,972	.....	33.0	599	485	114	.....	23.5
Wab., St. L. & Pacific.	3,350	2,480	870	....	35.1	1,315,775	1,121,592	194,183	.....	17.3	393	453	.....	60	13.3
Wisconsin Central	520	520	.....	....	.....	169,755	104,371	65,384	.....	62.9	327	201	126	.....	62.9
Total, 58 roads	46,814	41,181	5,633	....	...	26,598,223	22,582,077	4,348.325	332,179	.....	568	548	20	.....	.....
Total inc. or dec	.....	.....	5,633	....	13 7	.....	.....	4,016,146	.....	17.8	.....	.....	20	..	3.6

RAILROAD EARNINGS, THREE MONTHS ENDING MARCH 31.

Name of Road	Mileage. 1882.	1881.	Inc.	Dec	P. c.	Earnings. 1882.	1881.	Increase.	Dec.	P. c.	Earnings per Mile. 1882.	1881.	Inc.	Dec.	P. c.
						$	$	$	$		$	$	$	$	
Ala. Gt. Southern	290	290	.....	....	.....	196,192	184.554	11,638	.....	6.3	677	636	41	.....	6.3
Atchison, Top. & S. F.	1,790	1,583	207	...	13.1	3,247,000	2,203,000	1,044,000	.....	47.4	1,814	1,392	422	...	30.2
Buffalo, Pitts. & West.	205	205	.....	....	.....	181,754	142,576	39,178	.....	27.4	887	697	190	.....	27.4
Bur., Cedar Rap. & No.	620	564	56	...	9.9	702,560	449,810	261,750	.....	59.4	1,133	782	351	.....	45.0
Cairo & St. Louis	146	146	.....	....	.....	88,524	106,324	.....	17,800	16.8	606	728	.....	122	16.8
Central Iowa	244	190	54	...	28.4	273,763	150,285	123,478	.....	82.2	1,122	791	331	.....	48.0
Central Pacific	2,873	2,590	289	...	11.2	5,?28,469	4,766,762	761,707	.....	16.0	1,920	1,840	80	.....	4.3
Ches. & Ohio.	442	435	7	....	1.7	396,780	375,410	21,370	.....	3.7	1,350	1,323	27	.....	2.0
Chi. & Alton	847	840	7	....	0.8	1,697,733	1,503,353	194,440	.....	12 9	2,004	1,790	214	.....	11.9
Chi. & Eastern Ill.	232	220	12	....	5.5	412,498	364,212	48,286	.....	13.3	1,785	1,655	130	.....	7.9
Chi., Mil. & St. Paul	4,215	3,792	363	....	9.6	4,373,000	2,590,553	1,782,447	.....	68.8	1,052	683	369	.....	54.0
Chi. & Northwestern	3,280	2,787	493	....	17.6	3,788,847	2,3?2,637	1,406,180	.....	59.0	1,155	855	300	.....	35.1
Chi., St. P., Minn. & O.	1,019	950	69	....	7.2	1,066,697	668,028	398,669	.....	59.7	1,047	703	344	.....	49.1
Cin., Ind., St. L. & Chi.	300	30	.....	....	.....	613,544	544,974	68,570	.....	12.6	2,045	1,816	229	.....	12.6
Cin., N. O. & Tex. Pac	336	336	.....	....	.....	579,288	453,533	125,755	.....	27.7	1,724	1,350	374	.....	27.7
Cleve., Akron & Col	144	144	.....	....	.....	109.161	97,488	11,673	.....	12.0	758	677	81	.....	12.0
Denver & Rio Grande	1,062	551	511	....	92.9	1,439,956	1,023,649	416,307	.....	40.6	1,356	1,858	.....	502	27.0
Des Moines & Ft. Dodge	84	84	.....	....	.....	88,282	56,989	31,293	.....	54.9	1,051	678	373	.....	54.9
Flint & Pere Marq.	345	318	27	....	8.5	525,146	414,850	110,296	.....	26.6	1,522	1,305	217	.....	16.7
Grand Trunk	1,460	1,408	52	....	3.7	2,556,684	2,601,162	.....	64,478	2.5	1,757	1,847	.....	110	6.0
Great Western	526	526	.....	....	.....	1,185,385	1,275,783	.....	90,398	7.1	2,253	2,425	.....	172	7.1
Gr. Bay, Winona & St. P.	220	220	.....	....	.....	87,649	69,884	17,765	.....	25.4	398	318	.....	80	25.4
Hannibal & St. Jo.	292	292	.....	....	.....	449,116	453,631	.....	4,515	1.0	1,538	1,553	.....	15	1.0
Houston, E. & W. Tex.	104	85	19	....	22.3	51,791	27,786	24,005	.....	86.3	498	327	171	.....	52.3
Ill. Cent., Ill. lines	918	918	.....	....	.....	1,653,213	1,405,095	248,118	.....	17.7	1,801	1,531	270	.....	17.7
Iowa lines	402	402	.....	....	.....	459,718	308,474	151,244	.....	49.1	1,144	767	377	.....	49.1
Ind., Bloom. & West.	555	555	.....	....	.....	577,814	543,061	34,753	.....	6.4	1,041	979	62	.....	6.4
Kan. City, Ft. Scott & G.	320	305	15	....	4.9	406,093	322,228	83,865	.....	26.0	1,269	1,056	213	.....	20.2
Kan. City, Law. & So. K.	384	384	.....	....	.....	217,439	154,940	62,499	.....	40.3	566	404	162	.....	40.3
Lake Erie & West	386	386	.....	....	.....	320,056	288,590	31,466	.....	10.8	829	747	82	.....	10.8
Long Island	335	320	15	....	4.9	377,833	334,509	43,324	.....	12.9	1,128	1,045	83	.....	8.0
Louisville & Nashv.	2,060	1,840	220	....	11.9	2,998,322	2,570,043	428,279	.....	16.6	1,455	1,397	58	.....	4.2
Mil., Lake Sh. & West.	280	250	30	....	12.0	206,514	103,404	103,110	.....	99.7	738	414	322	.....	77.8
Minn. & St. L.	360	225	135	....	60.0	314,429	131,910	182,519	.....	137.0	873	582	291	.....	50.0
Mo. Pacific lines:															
Central Branch	371	300	71	....	23.6	209,158	192,793	16,365	.....	8.5	564	642	.....	78	12.2
Int. & Gt. No.	775	623	152	....	24.4	639,789	616,036	23,753	.....	3.8	825	989	.....	164	16.7
Mo., Kan. & Tex.	1,190	880	310	....	35.2	1,266,885	1,101,417	165,468	.....	15.0	1,065	1,252	.....	187	14.9
Mo. Pacific	817	700	117	....	16.7	1,577,838	1,398,076	279,762	.....	21.6	1,931	1,854	77	.....	4.2
St. L., Iron Mt. & So.	720	685	35	....	5.1	1,602,505	1,835,748	.....	233,243	12.7	2,226	2,680	.....	454	16.9
Texas & Pacific	1,130	800	330	....	41.2	899,340	861,885	37,455	.....	4.3	796	1,077	.....	281	26.1
Mobile & Ohio	528	506	22	....	4.3	472,238	672,029	.....	199,791	29.7	894	1,328	.....	434	32.7
Nash., Chatta. & St. L.	467	467	.....	....	.....	477,960	576,719	.....	98,759	17.1	1,023	1,235	.....	1212	17.1
N. Y. & N. England	396	316	80	....	25.3	686,088	575,380	110,708	.....	19.3	1,733	1,821	.....	88	4.8
Northern Central	326	326	.....	....	.....	1,251.113	1,221,720	29,393	.....	2.4	3,838	3,747	91	.....	2.4
Northern Pacific	972	722	250	....	34.7	892,800	358,195	534,605	.....	149.4	919	496	423	.....	84.8
Ohio Central	231	231	.....	....	.....	206.018	131,573	74,445	.....	56.4	892	570	322	.....	56.4
Pennsylvania	1,925	1,890	35	....	1.9	10,592,266	10,129,134	463,232	.....	4.5	5,503	5,359	144	.....	2.5
Peoria, Dec. & Evans.	254	190	64	....	33.7	188,938	118,785	70,153	.....	58.9	744	625	119	.....	19.0
Phila. & Reading	994	994	.....	....	...	4,403,585	4,256,127	147,458	.....	3 2	4,430	4,281	141	.....	3.2
Rochester & Pittsb'g.	108	108	.....	....	.....	62,285	51,108	11,177	.....	21.8	577	473	104	.....	21.8
St. L., Alt. & T. H., Main Line	195	195	.....	....	.....	303,870	338,975	.....	35,105	10.4	1,558	1,738	.....	180	10.4
Belleville Line	121	121	.....	....	.....	193,481	203,899	.....	10,418	5.1	1,599	1,688	.....	89	5.1
St. L. & San Francisco.	660	592	68	....	11.5	776,394	652,718	123,676	.....	18.9	1,176	1,103	73	.....	6.6
St. P., Minn. & Manitoba	910	740	170	....	23.0	1,344,823	734,631	610,192	.....	83.0	1,478	987	491	.....	49.7
Scioto Valley	128	100	28	....	28.0	108,069	72,493	35,576	.....	49.0	844	725	119	.....	16.4
Tol., Cin. & St. L.	395	285	110	....	38.6	215,852	134,464	81,388	.....	60.9	546	472	74	.....	15 7
Union Pacific	3,700	3,358	342	....	10.2	5,947,783	4,453,460	1,494,323	.....	33.5	1,607	1,326	281	.....	21.2
Wabash, St. L. & P.	3,350	2,480	870	....	35.1	3,680,508	2,752,131	928,377	.....	33.7	1,098	1,110	...	12	1.1
Wisconsin Central	520	520	.....	....	.....	459,115	278,259	180,856	.....	65.0	883	535	348	.....	65.0
Total, 59 roads	48,205	42,570	5,635	....	.....	75,810,111	62,878,272	13.686.346	754,507	.....	1,573	1,477	96	.....	.....
Total inc. or dec.	.....	.....	5,635	....	13.2	.....	.....	12.931,839	.....	20.6	.....	.....	96	.....	6.5

Joseph L. Hance. The officers and Conrad N. Jordan, John B. Woodward and George W. Smith constitute the Executive Committee.

Baltimore & Ohio.—A circular from this company announces that on May 1 the headquarters of Mr. C. S. Wright, Assistant General Freight Agent, Trans-Ohio Division, were removed to Columbus, O., and division freight agencies Central Ohio, Straitsville and Lake Erie Divisions abolished. From that date agents and connections are requested to send to the Assistant General Freight Agent at Columbus all communications, reports, etc., which have heretofore been sent to the division freight agents of these divisions. Mr. T. H. Noonan will remain Division Freight Agent of the Chicago Division, office at Tiffin, O., as heretofore. Mr. W. E. Ludlow, under title of General Coal Agent, will continue in charge of the coal department, with headquarters at Sandusky, O. The office of Mr E. Rowland, Trace Agent Trans-Ohio divisions, Tiffin, O., will be removed to Columbus, O.

Buffalo, New York & Philadelphia.—The following circular from General Superintendent George S. Gatchell is dated Buffalo, May 1:

"Mr. W. W. Halsey is hereby appointed Car Accountant and Assistant to the General Superintendent of the Buffalo, New York & Philadelphia and leased lines.

"Mr. James T. Gardner is appointed Superintendent of the Buffalo Division, with headquarters at Buffalo.

"Mr. J. W. Watson is appointed Superintendent of the Narrow-Gauge Division, with headquarters at Olean, N. Y.

"The Buffalo Division includes the Buffalo, New York & Philadelphia Railway from Buffalo to Emporium, and the McKean & Buffalo Railroad from Larabees to Clermont.

"The Narrow-Gauge Division includes the Olean, Bradford & Warren Railway, the Kendall & Eldred Railroad, the Bradford Railroad and the Kinzua Railroad."

Canada Junction.—The directors of this new company are: Bradley Barlow, F. A. Metcalf, St. Albans, Vt.; Horace Fairbanks, A. B. Jewett, St. Johnsbury, Vt.

Carolina Central.—At the annual meeting, held April 27, the following directors were chosen: D. W. Oates, Charlotte, N. C.; M. P. Leak, Lumberton, N. C.; C. M. Stedman, Wilmington, N. C.; R. S. Tucker, J. C. Winder, Raleigh, N. C.; W. W. Chamberlain, Norfolk, Va.; J. L. Minnis, Severne Eyre, R. C. Hoffman, John M. Robinson, J. S. Whedbee, Baltimore. The board elected John M. Robinson President.

Catawissa.—At the annual meeting in Philadelphia, May 1, the following were chosen: President, M. P. Hutchinson; directors, T. V. Williamson, F. K. Shipper, Emmor Weaver, Geo. C. Carson, Joseph C. Harris, John S. Graham. The road is leased to the Philadelphia & Reading.

Central Ohio.—At the annual meeting in Columbus, O., April 26, the following directors were chosen: David Applegate, Walter B. Brooks, W. H. Clements, Bradford Dunham, William Dennison, Robert Garrett, Isaac W. Hall, Joshua G. Harvey, Joseph W. Jenkins, Hugh J. Jewett, Osman Latrobe, David Lee, Joseph R. Swan. The road is leased to the Baltimore & Ohio Company.

Chicago, Burlington & Quincy.—At the annual meeting in Chicago, April 26, the old board was re-elected, as follows: John M. Forbes, Sidney Bartlett, Charles J. Paine, Channing Clapp, John L. Gardner, Jr., William Endicott, Jr., Edward Bangs, Boston; John N. A. Griswold, Peter Geddes, New York; Wirt Dexter, Chicago; Charles E. Perkins, Burlington, Ia. The total number of shares voted was 450,000, and there was no opposition.

Mr. J. A. Sheppard has been appointed Chief Clerk of the local passenger service in place of Mr. Lomax, who has been appointed Chief Clerk of the foreign freight service. Mr. Sheppard has been connected with the passenger department of the road for many years.

Mr. S. E. Crance is appointed Assistant Superintendent in charge of the St. Louis Division, with office at Beardstown, Ill. He succeeds W. R. Crumpton, resigned.

Chicago, Rock Island & Pacific.—Mr. J. V. Mahoney has been appointed General Agent for the Seneca Line, and is to have charge of the freight business going *via* Seneca in connection with the Cincinnati, Indianapolis, St. Louis & Chicago. Mr. Mahoney will perform these duties in addition to his present duties as General Freight and Ticket Agent of the Peoria & Rock Island road.

Cincinnati, Hamilton & Dayton.—Mr. W. J. Mulvihill has been appointed Car Accountant. He formerly held the position, but was retired some months ago.

Cincinnati, Wabash & Michigan.—Mr. J. H. Cary is appointed Auditor, with office at Elkhart, Ind.

Connotton Valley.—Mr. W. W. Hungerford has been chosen General Manager. He was formerly General Superintendent of the Ogdensburg & Lake Champlain road, and more recently of the Texas-Mexican road.

Davenport, Iowa & Dakota.—The directors of this new company are: H. W. Bailey, M. R. Jackson, Tipton, Ia.; J. S. Stacey, Anamosa, Ia.; Michael Spelletitch, Hickory Grove, Ia.; Levi Higgins, Orion, Ill.; A. C. Fulton, A. J. Hirsh, Robert Krause, J. H. Murphy, Edward Russell, L. F. Parker, W. C. Wadsworth, A. F. Williams, Davenport, Ia.

Eastern, in New Hampshire.—At the annual meeting at Portsmouth, N. H., May 3, the following directors were chosen: Moody Currier, Dexter Richardson, Francis Thompson, E. L. Giddings, E. A. Abbott, Wm. H. Goodwin, Frank A. Philbrick. The board elected Moody Currier President; Wm. H. Hackett, Clerk. The road is leased to the Eastern Company.

East Tennessee, Virginia & Georgia.—The board has elected Mr. Samuel Thomas President, in place of E. W. Cole, resigned, and has also chosen General Manager Henry Fink Vice-President in place of Mr. Thomas. Col. Cole continues a director of the company.

Humeston & Shenandoah.—This company has elected officers as follows: President, W. W. Baldwin; Treasurer, James F. How; Secretary and General Manager, F. P. Wyatt. The road is owned jointly by the Wabash, St. Louis & Pacific and the Chicago, Burlington & Quincy companies.

Indiana, Illinois & Iowa.—Mr. T. P. Shonts is appointed Superintendent, with office at Dwight, Ill.

Lake Shore & Michigan Southern.—At the annual meeting in Cleveland, O., May 3, the old board was re-elected as follows: William H. Vanderbilt, Cornelius Vanderbilt, William K. Vanderbilt, Augustus Schell, Samuel F. Barger, John E. Burrill, Darius O. Mills, New York; Amasa Stone, Henry B. Payne, Cleveland; William L. Scott, Charles M. Reed, Erie, Pa.; Rasselas Brown, Warren, Pa.; Albert Keep, Chicago. There was no opposition.

Leavenworth, Topeka & Southwestern.—Mr. A. W. Johnston is appointed Superintendent of Construction. He was recently Chief Engineer of the Toledo, Cincinnati & St. Louis road.

Lewiston & Auburn.—At the annual meeting last week the following directors were chosen: George S. Woodman, James Dingley, Charles E. Smith, J. L. H. Cobb, E. S. Davis, J. M. Robbins, C. I. Barker, James Dempsey, G. G. Wagg. The road is worked by the Grand Trunk Company.

Little Rock & Ft. Smith.—At the annual meeting in Little Rock, May 1, the following directors were chosen: William M. Fishback, Ft. Smith, Ark.; Jesse Turner, Van Buren, Ark.; C. F. Clark, Dudley E. Jones, W. D. Slack, Little Rock, Ark.; Elisha Atkins, J. H. Converse, F. Gordon Dexter, F. M. Weld, Boston. The board elected J. H. Converse President; Jesse Turner, Vice-President; J. W. Gay, Secretary; Joseph Kampman, Treasurer. There is no change from last year.

Louisville & Nashville.—Mr. C. O. Parker has been appointed Road-Master of the South & North Alabama road in place of H. S. Perkins, resigned.

Louisville, New Albany & Chicago.—The following circular from General Superintendent McLeod is dated Louisville, Ky., April 26:

"Mr. H. O. Nourse has been appointed Purchasing Agent for this company, vice Mr. W. M. Lewis, who will continue to discharge the duties of Paymaster. Mr. Nourse will make his headquarters at Louisville, report to the General Superintendent, and have charge of the purchasing and issuing of all supplies, except stationery. The storekeeper will report to him."

Manhattan, Alma & Burlingame.—At the annual meeting recently the following directors were chosen: F. G. Dexter, W. B. Strong, L. M. Sargent, I. T. Burr, Alden Speare, S. L. Thorndike, C. C. Wheeler, Elisha Atkins, F. L. Ames, Sidney Dillon, J. F. Dillon, G. W. Veale, E. B. Purcell. The board elected F. G. Dexter, President; W. B. Strong, Vice President; E. Wilder, Secretary and Assistant Treasurer; G. L. Goodwin, Treasurer and Assistant Secretary; C. C. Wheeler, General Manager. The road is owned jointly by the Atchison, Topeka & Santa Fe and the Union Pacific companies.

Midland, of Canada.—At a meeting of the consolidated board in Peterboro, Ont., April 19, George A. Cox was chosen President and General Manager and William Gooderham Vice President. Other appointments were made as under: General Traffic Manager, Arthur White; Superintendent, W. B. Ferguson; Secretary-Treasurer, Henry Read; Auditor, J. F. Jeffers; Locomotive Engineer, J. Haggas; Engineer, T. A. Hay; Solicitor, John Bell; Executive Committee, Cox, Gooderham, Ferris, Jaffray, Edgar, Dwight and Dundas. Committee in London, Eng., Sir Henry Tyler, Sir Charles Young, Lord Claud John Hamilton, Henry Grissel, Ulick Ralph Burke and E. J. Halsey. A by-law was passed fixing the chief office at Peterboro, with a branch office in Toronto, Ont., for the transaction of business.

Minneapolis & St. Louis.—Mr. R. R. Cable has been chosen President and H. H. Porter Vice-President. It is understood that the executive officers of the road will not be changed. The following new directors have been chosen to fill vacancies made by resignation: H. H. Porter, C. D. W. Young, T. F. Wetherill, W. W. McNair, W. R. Merriam, Benjamin Brewster.

New York, Lake Erie & Western.—Mr. M. E. Staples, for some years Depot-Master in Jersey City, has been made Superintendent of the freight transfer across the Hudson River, and will have charge of all the tugs, barges and floats employed in that service.

Mr. C. Hepburn, for many years a passenger conductor, succeeds Mr. Staples as Depot-Master.

Northern Pacific.—It is Col. C. B. Lamborn, and not Dr. Robert Lamborn, who has been appointed Land Commissioner.

Ohio & Mississippi.—Mr. W. B. Shattuc will succeed the late C. S. Cone, Jr., as General Passenger Agent. Mr. Shattuc has been on the New York, Pennsylvania & Ohio for a long time, and is one of the best known passenger men in the country.

Pennsylvania.—The office of Mr. John Whittaker, General Agent for New York and New England, has been removed to the new Guernsey Building, No. 160 Broadway, New York. All communications should be addressed accordingly.

Philadelphia & Chester County.—At the annual meeting in Philadelphia, May 1, the following were chosen: President, Thomas S. Cox; directors, J. G. Allen, J. C. Sharpless, Samuel Work, Samuel Wilson, Louis J. Ladner, Lewis Lukens; Treasurer, J. G. Allen; Secretary, W. Wayne Vogdes.

Richmond & Allegheny.—At a recent meeting of the board General Manager Decatur Axtell was chosen Vice-President also, in place of Samuel Thomas, resigned. Mr. E. R. Leland, Secretary of the company, was chosen Assistant to the President, and Mr. R. B. Snead was chosen Treasurer in place of Sheppard Homans, resigned.

Rye Beach.—The directors of this new company are: David Jenness, E. B. Philbrick, Frank A. Philbrick, Rye, N. H.; Frank Jones, Portsmouth, N. H.; Albert Bachelder, Northampton, N. H. The board elected E. B. Philbrick President; G. H. Jenness, Clerk.

Southern Pennsylvania.—At the annual meeting in Philadelphia, May 1, the following were chosen: President, Thomas B. Kennedy; directors, George B. Roberts, Wistar Morris, Strickland Kneass, H. D. Welsh, H. M. Phillips, J. N. DuBarry. The road is worked by the Cumberland Valley Company.

Utah Central.—Mr. D. S. Spencer is appointed Train Dispatcher and J. E. Clinton Assistant Train Dispatcher, with offices at Salt Lake, Utah.

Vicksburg & Meridian.—At the annual meeting last week the following officers were chosen: George P. Arents, Edward R. Bacon, Charles E. Lewis, Charles A. Page, Otto Plock, Alfred Slidell, Frederick Wolffe. The board elected Otto Plock, President; Frederick Wolffe, Vice-President; Charles A. Page, Secretary and Treasurer; John Scott, General Manager; W. A. Nugent, Attorney.

Wabash, St. Louis & Pacific.—Mr. Roland S. Miner is appointed Superintendent of the St. Louis and Kansas City divisions, with office at Moberly, Mo. He was recently Road-Master of the Eastern Division.

Western Weighing Association.—Mr. D. T. Moore has been appointed Traveling Agent for all points east of the Mississippi, and Mr. C. H. Rippey Traveling Agent for all points west of the Mississippi.

PERSONAL.

—Mr. Sheppard Homans has resigned his position as Treasurer of the Richmond & Allegheny Company.

—Mr. H. S. Perkins has resigned his position as Road-Master of the South and North Alabama Division of the Louisville & Nashville road.

—Mr. W. B. Knight, a well-known civil engineer, and a member of the American Society of Civil Engineers, has been chosen City Engineer of Kansas City, Mo., by the City Council.

—Mr. R. M. Van Arsdale, proprietor of the *National Car-Builder*, has moved his editorial and business offices to the new Morse Building, corner of Beekman and Nassau streets, New York.

—Mr. Samuel Thomas has resigned his position as Vice-President of the Richmond & Allegheny Company, in order to devote his time to other railroad enterprises in which he is interested.

—It is reported that Mr. George O. Manchester, General Manager, and Thomas Appleton, Chief Engineer of the Leavenworth, Topeka & Southwestern road, have resigned their positions.

—Mr. Louis Blankenhorn, Division Freight Agent of the Chicago, Milwaukee & St. Paul Railway, and formerly of the Rhinebeck & Connecticut Railroad, was married at Milwaukee, April 26, to Miss Lillian Stevens.

—Major J. C. Turner, formerly of Hillsboro, N. C., died April 24, at the residence of his son in Clarksville, Ga., aged 70 years. He was employed as an engineer in the construction of the North Carolina Railroad, and was the first Chief Engineer of the Western North Carolina road.

—Mr. Peter B. Borst died at Luray, Va., April 25. He was well known at home as a lawyer and politician; he was also the first President of the Shenandoah Valley Company, and was an ardent advocate of the projected Washington, Cincinnati & St. Louis road, of which he was President for a time.

—Mr. J. H. Page has resigned his position as Assistant General Passenger Agent of the Chicago, Milwaukee & St. Paul road, and will engage in other business. Mr. Page has had long experience in the passenger business, and was at one time General Passenger Agent of the International & Great Northern.

—Col. E. W. Cole has resigned his position as President of the East Tennessee, Virginia & Georgia Company; he remains a director of the company. It has been understood for some time that Col. Cole wished to retire from active work for a time, in order that he might rest and give some attention to his health.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Four months ending April 30:				
C., St. P., M. & O.	$1,430,708	$928,239	I. $501,469	54.0
Denver & R. G.	1,999,873	1,456,760	I. 543,113	37.3
Mil., L. S. & West.	274,037	146,886	I. 127,151	86.5
Rochester & Pitts.	87,704	68,132	I. 19,572	28.8
Three months ending March 31:				
Clev., Col., C. & I.	$825,675	$937,603	D. $111,928	11.9
Northern Central	1,251,113	1,221,720	I. 29,393	2.4
Net earnings	347,285	470,705	D. 123,420	26.2
Month of February:				
St. John & Maine	$9,359	$8,789	I. $570	6.5
Net earnings		735		
Month of March:				
Clev., Col., C. & I.	$301,187	$356,075	D. $54,888	15.4
Month of April:				
C., St. P., M. & O.	$356,546	$261,211	I. $95,535	36.5
Denver & R. G.	559,917	433,111	I. 126,806	29.3
Mil., L. S. & West.	67,523	43,776	I. 23,747	54.0
Rochester & Pitts.	25,419	17,024	I. 8,395	49.4
Third week in April:				
Chi. & Eastern Ill.	$29,560	$33,518	D. $3,958	11.8
Chi. & Gd. Trunk	44,045	30,746	I. 13,299	42.5
Great Western	104,897	112,761	D. 7,864	6.9
Wabash, St. L. & P.	353,630	266,426	I. 87,204	32.8

Coal Movement.

Coal tonnages reported for the week ending April 22 were as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Anthracite	632,339	415,746	I. 216,593	52.1
Semi-bituminous	78,200	109,171	D. 30,971	28.3
Bituminous, Penna	64,854	42,024	I. 22,812	54.3
Coke, Penna	58,993	51,233	I. 7,760	15.1

Anthracite trade continues very dull indeed and there has been a general fall in prices.

There is no change to report in the Cumberland strike. The report that the Clearfield miners will strike is not credited by well-informed parties.

Coal shipments over the Columbia & Puget Sound road and by sea from Seattle, Wash. Ter., in March were 13,404 tons. For the three months ending March 31 the shipments were: 1882, 40,619; 1881, 34,959; increase, 5,660 tons, or 16.2 per cent.

The coal tonnage of the Pennsylvania Railroad for the week ending April 22 was: Coal, 158,722; coke, 58,993; total, 217,715 tons. The total tonnage this year to April 22 was 3,365,785 tons.

Coal tonnage over the Kansas City, Ft. Scott & Gulf road in March was 32,339 tons.

During March the Tennessee Coal, Iron & Railroad Co. carried over its road from Tracy City, Tenn., 12,000 tons of coal and 11,000 tons of coke. The total shipments for the three months ending March 31, were 37,000 tons of coal and 29,000 tons of coke, 66,000 tons in all.

Grain Movement.

For the week ending April 22, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantics ports have been, in bushels, for the past six years:

Year.	Northwestern receipts.	Northwestern shipments. Total.	By rail.	P. c. by rail.	Atlantic receipts.
1877	3,002,595	3,982,417	1,303,754	33.4	2,858,970
1878	3,488,560	3,034,035	907,549	29.8	3,037,286
1879	3,426,327	3,017,955	.....	....	4,532,797
1880	2,912,130	3,984,877	1,181,904	29.7	4,336,804
1881	3,629,586	4,350,219	3,543,249	81.5	4,291,224
1882	3,620,878	3,494,156	1,349,876	38.6	1,678,562

For the first time for several months, the receipts of the Northwestern markets for the week were larger than in the corresponding week of any previous year, though almost the same as last year. They are 40 per cent. greater than the week before and the largest for ten weeks. The shipments of these markets, though navigation was open this year and not last, were a fifth less than last year, but they were the largest since the middle of last November. Of these shipments, 182,402 bushels were by the Mississippi River this year, against 806,970 last year. The rail shipments are not unsatisfactory for a time when rates are maintained and navigation is open, and are an unusually large proportion of the whole for such a period. The Atlantic receipts are but about two-fifths of those of the corresponding week in 1881, 1880 or 1879, and are the smallest since 1873 at least. But

they are 300,000 bushels more than the week before, and are the largest since February. There were no receipts by canal till the next week.

Of the Northwestern receipts Chicago had 37 per cent., St. Louis 19.6, Peoria 18.7, Toledo 14.0, Detroit 5.5, Milwaukee 5, and Duluth 0.2 per cent. Of the gain of 1,054,000 bushels over the previous week Chicago had 576,000, Toledo 206,000, Peoria 204,000, and St. Louis 130,000 bushels.

Of the Atlantic receipts, New York had 39.4 per cent., Philadelphia 24.4, Boston 12.6, New Orleans 11.8, Baltimore 8, Portland 3.6, and Montreal 0.2 per cent. The noticeable feature of the week is a great gain at Philadelphia, its receipts being more than twice as great as the week before or any other week since Feb. 18, and larger than they have been since September last.

Exports from Atlantic ports for the week ending April 22 were 886,595 bushels—59.5 from New York, 20.4 from Baltimore, 10.3 from Boston, 5.8 from Portland, and 4 per cent. from Philadelphia.

For the week ending April 26 the exports were 799,844 bushels of grain and 73,778 barrels of flour this year, against 3,117,793 bushels of grain and 118,901 barrels of flour last year.

For the eight weeks ending April 26 exports have been :

	1882.	1881.	Inc. or Dec.	P. c.
Flour, bbls.. ...	593,171	967,086	D. 373,915	38.6
Wheat, bu.....	5,585,254	16,127,706	D. 10,542,452	65.4
Corn, bu.....	3,581,127	14,433,853	D. 11,052,726	76.6
Rye, bu....	319,155	184,624	I. 134,531	73.0
Peas, bu..... ...	261,271	167,434	I. 93,837	56.0
Total bu... ..12,216.076		35,265,504	D. 23,049,428	65.3

No comment is needed on the immense decrease of these exports.

Baltimore grain receipts in April were as follows, flour in barrels and grain in bushels:

	1882.	1881.	Inc. or Dec.	P. c.
Flour.....	119,072	96,119	I. 22,953	23.9
Wheat.....	278,688	1,597,953	D. 1,319,265	82.6
Corn:.....	206,467	1,892,275	D. 1,685,808	88.9
Other grain.....	41,390	121,066	D. 79,676	65.8
Total grain.....	526,545	3,611,294	D. 3,084,749	85.4
Total, flour reduced to wheat.	1,121,905	4,091,889	D. 2,969,984	72.5

Exports for the month were 34,468 barrels and 11,680 sacks of flour, 565,284 bushels wheat and 107,799 bushels corn.

New England Car Mileage Settlements.

At a meeting of the superintendents of New England roads in Boston last week it was resolved that on and after May 1 the settlement of balances for car service between the New England roads shall be made through the railway clearing-house in Boston. These accounts have been made up at the clearing-house since the date of its organization, four years ago, but the settlements have been made by the treasurers one with another.

New York-Boston Fast Trains.

The new afternoon fast trains betwen New York and Boston began to run May 1. The trains are limited to six cars, and make six stops, at New Haven, Meriden, Hartford, Springfield, Palmer and Worcester. The run is made in just six hours, or at the rate of 39 miles an hour.

April Receipts at Chicago and Milwaukee.

Receipts for four successive years have been:

	1879.	1880.	1881.	1882.
Chicago:				
Grain, bush.....6,440,513		5,858,314	5,437,169	5,082,201
Flour, bbls.	284,073	233,007	484,966	245,046
Hogs, No.....	326,989	470,143	331,657	468,286
Milwaukee:				
Grain, bush.....	1,075,576	698,985	1,031,198	778,116
Flour, bbls.....	178,831	144,009	307,840	204,411
Hogs, No.....	11,116	24,935	18,453	28,125

The decrease in grain receipts is much less than in March, and in the last two weeks there has been a considerable increase over last year—indeed the receipts have been positively very large. Thus the receipts of flour (reduced to bushels) and grain for the first 14 days and last 16 days of the month and for the whole month have been:

	1879.	1880.	1881.	1882.
April 1 to 14....	4,399,815	3,453,021	4,534,319	2,943,394
April 15 to 30...	5,199,342	4,800,850	5,471,675	4,939,479
Whole month.	9,599,157	8,253,871	10,005,994	7,882,873

We see that the receipts in the first half of the month were this year nearly 1,600,000 bushels less than last year; in the last half only 542,000 bushels less, and more than in 1880, which was a year of very heavy grain movement.

For three successive months the receipts have been:

	1879.	1880.	1881.	1882.
February.....	..8,553,022	7,567,491	7,850,527	9,609,557
March.....	9,834,277	11,638,627	8,402,159	7,723,763
April.....	9,599,157	8,253,871	10,005,994	7,882,873

The April receipts this year were but little more than the March receipts, but the receipts of the last two weeks of the month were larger than in any two weeks previous since the middle of February.

Lake Superior Iron Ore.

Shipments of iron ore from the Lake Superior Region up to April 26, as reported by the Marquette *Mining Journal*, were 53,285 tons, all from Escanaba; 20,535 tons were from the Marquette District and 32,700 tons from the Menominee District. There were 275 tons of pig iron shipped from St. Ignace, the new port at the terminus of the Detroit, Mackinac & Marquette road.

The *Mining Journal* says: "Some vessels have been loaded at Marquette, but as yet none have cleared. Some 15 or 20 vessels of the largest class are in the harbor, and it may be said that the shipping season is fairly inaugurated. The first shipments reported last year were for the week ending May 11, up to which time some 25,000 tons had been shipped from Escanaba, and none at all from any of the other ports. It will thus be seen that we commence the season full two weeks earlier than last year."

Ticket Scalpers in New York.

The general passenger agents of the four trunk lines have issued the following circular to outside agents or scalpers in New York:

"Conformably with the requirements of the penal code of the state of New York, taking effect May 1, 1882, the following-named companies (the New York Central, the Erie, the Pennsylvania, and the Baltimore & Ohio) are obliged to withdraw, and do hereby withdraw from you from that date any authority that may heretofore have been given you to sell or issue passage tickets, orders or certificates of any class or description over our respective lines."

Colorado Traffic Association.

A meeting was held in St. Louis, April 30, a full representation being present. The claim of the Chicago, Burlington & Quincy to an increased percentage in the pool on Colorado business was presented, and it was decided to leave the matter to arbitration. The Chairman was directed to appoint a committee, which will consider the matter and report to the next meeting of the association.

Southern Summer Passenger Rates.

A meeting of the Southern Association, General Passenger & Ticket Agents, was held in Chattanooga, Tenn., April 26, C. P. Atmore presiding. There was a good representation. The special object of the Association was to make rates to summer resorts, and the rate from New Orleans to Sulphur Springs was adopted as a basis. The following are standards for round-trip tickets adopted for the territory surrounding the cities named: Montgomery, 4 cents; Atlanta, 4½ cents; Birmingham, 4 cents; Memphis, 4 cents; Vicksburg, 4 cents; Meridian, 4 cents; Selma, 4 cents; Nashville, 5 cents; Decatur, 4 cents; Jackson, 4 cents; Louisville, 5 cents. The whole matter was then referred to the Rate Committee, who were instructed to prepare a rate sheet in accordance with the standards, and supply all the agencies as soon as possible. A resolution was adopted permitting excursion tickets for Northern, Eastern, and Southern resorts to be put on sale May 15, but not making it obligatory. Resolutions were also passed that baggage on all limited tickets be checked to destination only. The subjects of continuous-passage tickets and of entitling holders of tickets to go by one route and return by any other were discussed, but no action was taken. The convention adjourned to meet in Cincinnati in October.

THE SCRAP HEAP.

Locomotive Building.

At a meeting of the directors of the Danforth Locomotive & Machine Works in Paterson, N. J., April 28, it was voted to change the name of the corporation to the Cooke Locomotive & Machine Co. The change is made because the new name will more fairly represent the present ownership and management. The present officers are: President, James Cooke; Vice-President and General Manager, John S. Cooke; Secretary and Treasurer, Wm. Berdan; Agent, H. A. Allen.

The shops of the Cumberland & Pennsylvania road at Mt. Savage, Md., are working 15 hours a day, although the business of the road has been temporarily stopped by the miners' strike. They are building engines for other roads, and are shipping two engines a month. A 50-ton consolidation engine for the Pittsburgh Central road is nearly finished, and orders for more of the same class are offered. The shops are in charge of Mr. N. W. Howson, Master Mechanic of the road.

The Pennsylvania Railroad shops in Altoona recently turned out a heavy double-ender passenger engine to run on the local trains out of West Philadelphia. It is a tank engine, with 17 by 24-in. cylinders and 5-ft. driving wheels, a pony truck in front and a six-wheeled truck under the rear end. The tanks are on either side, and the cab is upon top of the engine and entirely inclosed.

Car Notes.

The Barney & Smith Manufacturing Co. at Dayton, O., has lately completed four Wagner sleeping cars, to run on the Michigan Central road.

The New York, Lake Erie & Western shops in Jersey City have built several combined baggage and smoking cars on the Pennsylvania Railroad pattern. They are very handsome and comfortable cars, and are a striking contrast to the old, dirty and uncomfortable cars which constitute the larger part of the passenger equipment.

The Missouri Car and Foundry Co. in St. Louis has lately received orders for four 45-ft. stock cars and one 50-ft. elephant car for Cole's circus; 50 refrigerator cars for the Anhauser-Busch Brewing Co., of St. Louis, and 500 box cars for the Central Iowa road.

The LaFayette Car Co. at LaFayette, Ind., is building 100 box cars for the Cincinnati, Indianapolis, St. Louis & Chicago, and 80 caboose cars for the New York, Chicago & St. Louis road.

Bridge Notes.

Kellogg & Maurice, at Athens, Pa., are putting in special machinery for the manufacture of steel for bridge purposes. Their works are very busy and employ about 300 men.

The Pittsburgh Bridge Co. in Pittsburgh, Pa., has lately taken orders for 20 new bridges, and has work enough to keep the shops busy for four months.

The Corrugated Metal Co. at East Berlin, Conn., has nearly completed two large new buildings, and is putting in new machinery. The company has the contract for a bridge over the Merrimac at Lowell, Mass., with five spans of 155 ft. each, a roadway 37 ft. wide, and two 7-ft. sidewalks.

The Morse Bridge Co., at Youngstown, O., has recently secured contracts for bridges, which will keep the works busy all through the summer.

Iron and Manufacturing Notes.

The Industrial Works at Bay City, Mich., have lately completed three steam shovels for the St. Paul, Minneapolis & Manitoba road.

The recent fire in the establishment of the Chalmers-Spence Co., in the Morgan Iron Works, New York, caused a loss of $50,000, mostly covered by insurance. The fire will not, however, interfere with the business of the company, and all orders for boiler coverings will be filled promptly, as usual.

The Cuyahoga Works in Cleveland, O., have just completed a steam helve-hammer for the Cleveland City Forge & Iron Co. It is said to be the largest helve-hammer now in use, having a steam cylinder 36 in. in diameter. It can forge a shaft 30 in. in diameter.

Wm. Tod & Co., at Youngstown, O., have built an addition to their works and added a large steam-hammer to their machinery.

Witherow & Gordon, of Pittsburgh, are building a blast furnace at Roanoke, Va., for the Crozier Iron & Steel Co., of Chester, Pa. They are also putting up three hot-blast stoves for the Isabella Furnace Co. in Pittsburgh.

There was a meeting on Tuesday of the stockholders of the Pittsburgh & St. Louis Iron Improvement Co., of Pittsburgh, at the office of Kier Bros., called by John A. Stearns, the former Manager, with the object of reviving that corporation. He submitted a proposal to the stockholders to exchange their stock for stock in a new company, which he says he can organize with the aid of Johnstown capitalists, who will put $5,000 into the scheme and add other patents. The stockholders took no action on the proposal.—*Pittsburgh Manufacturer, April 28.*

The Valley Mill at Youngstown, O., is being enlarged.

A new blast furnace at Hanging Rock, O., is in progress.

The Oregon Iron & Steel Works is the name of a company just organized at Portland, Or., to work the iron and coal mines in Oswego and build blast furnaces.

A contract has been made for the erection of steel works at Franconia, N. H., in which iron and steel are to be made with petroleum as fuel.

Katahdin Furnace at Katahdin, Me., is in blast, making car-wheel iron.

Oxford Furnace in Warren County, N. J., has gone into blast again. This is one of the oldest furnaces in America.

The Rail Market.

Steel rails continue active, with quotations at $53 for early delivery and $50 per ton at mill for large orders for winter or spring deliveries. The mills are fairly supplied with orders.

Iron rails are very quiet, with sales of small lots only at from $46.50 for heavy rails up to $50 for light sections.

Spikes and rail-joints are unchanged, with very little new business.

Steel blooms are nominally $42 per ton, duty paid, but without any sales.

Old iron rails are extremely dull, and have been offered at $28 per ton in Philadelphia, with no takers. Crop ends are offered at $25 to $25.50, with considerable business.

British Rail Exports.

For the month of March and the three months then ending the exports of iron and steel rails from Great Britain to the United States and to all countries have been, for three successive years, in tons of 2,240 lbs:

To United States:	March.			Three months.		
	1880.	1881.	1882.	1880.	1881.	1882.
Iron rails.....	..10,518	10,849	2,508	25,067	26,911	16,675
Steel rails..... ...	4,010	14,891	19,757	17,522	20,976	56,035
Total. 14,528		25,720	22,265	42,589	47,887	72,710
To all countries:						
Iron rails... 12,812		12,023	4,473	32,796	30,052	22,646
Steel rails.....	26,553	36,484	57,289	76,955	80,396	170,419
Both.... 39,365		48,507	61,742	109,751	110,448	193,065

The exports of iron rails to this country in March were but a quarter of what they were last year and the year before, but there was a large increase in the steel rails, leaving, however, the total March exports to this country about 10 per cent. less than last year. For the three months there is a large decrease in iron but an enormous increase in steel, so that our imports of both were 50 per cent. more than last year.

In exports to all countries there is a large decrease in iron but a very large increase in steel, making the total one-quarter more than last year, in spite of the decrease to the United States. For this quarter about one-fourth less iron was exported, but more than thrice as much steel, and in both there is an increase of 82,617 tons, or 75 per cent. The United States this year took 73½ per cent. of all the iron rails and 33 per cent. of all the steel rails exported from Great Britain. Last year it took 90 per cent. of the iron and 25 per cent. of the steel. The consumption outside of the United States, which for some time had not grown much, shows a decided increase—of steel and iron rails 120,355 tons this year, against 62,561 tons last year and 67,162 tons in 1880. The largest increase is in British India, to which 22,004 tons (320 per cent.) more than last year were exported, to Italy, Australia and "other countries" (including Mexico).

Long Bridges.

Mr. K. Pfarski has made a list of the longest bridges at present existing, which are the following, their lengths being given in metres—about 3 ft. 3¾ in.: Parkersburg bridge, 2,147; St. Charles Bridge, over the Missouri, 1,993; Ohio Bridge, near Louisville, 1,615; bridge over the East River, 1,500; Delaware Bridge, Philadelphia, 1,500; Victoria Bridge, over the St. Lawrence, 1,500; new Volga Bridge, near Syssran, 1,485; Hollands-Diep Bridge, near Moerdyk, 1,479; bridge over the Pongabuda, near Gooty (India), 1,130; Dniester Bridge, near Kiew, 1,081; Rhine Bridge, near Mainz, 1,028; Dnieper Bridge, in Pultawa (Russia), 974; Mississippi Bridge, near Quincy, 972; Missouri Bridge, near Omaha, 850; Weichsel Bridge, near Dirschau, 837; Danube Bridge, near Stadlau, 769; Po Bridge, near Mezzana Corti, 758; Tamar Bridge, near Saltash, 665; Leck Bridge, near Kuilenberg, 665; Mississippi Bridge, near Dubuque, 536; bridge over the Gorai River (India), 529; Britannia Bridge, near Bangor, 464; Saane Bridge, near Freiburg, 382; Theiss Bridge, near Szegedin, 355. The new Volga Bridge, near Syssran, is accordingly the longest in Europe.

Sale of Car Works.

At the auction sale of the Bellefonte Car Works in Bellefonte, Pa., May 17, the property will be sold in two lots. Lot A, the real estate and fixtures, is appraised at $48,138; upset price, $28,000. Lot B includes the tools and machinery and is appraised at $23,575; upset price, $15,000. The upset price for the two lots together is $35,000. The terms of sale are 15 per cent. cash and the balance on one and two years' time. Possession of the property will be given June 17.

What Can It Be?

A telegram from Chicago, May 3, informs us that the *Inter-Ocean* of that date makes a mysterious but prominent announcement that an advanced step in railroading has been discovered, which will revolutionize that science and put it fifty years ahead of the age. It says the officials of six of the largest and most enterprising roads in the Mississippi Valley have been for two days discussing the new improvement, the nature of which will be announced in a few days.

OLD AND NEW ROADS.

Atlantic & Pacific Interoceanic.—The organization of this company has been completed in New York. The company has been formed to build a railroad across Central America from Port Cortes, on Honduras Bay, to Fonseca, on the Pacific—a distance of 234 miles according to the route surveyed. Of this, 38 miles of road are in operation. The company has a large concession from the Honduras government.

Asheville & Spartanburg.—Work will be begun in a few days on the extension of this road from Hendersonville, N. C., to Asheville, 18 miles. Most of the work is light, and about half the distance was graded several years ago. The road is controlled by the Richmond & Danville.

Augusta & Knoxville.—This road is completed from Augusta, Ga., northward to Greenwood, S. C., 70 miles, and trains will soon begin to run to the new terminus.

Work is now in progress on the extension from Greenwood to Spartanburg, which is known as the Spartanburg, Laurens & Greenwood road.

Boston, Lowell & Concord.—The Boston & Lowell and the Concord companies have concluded a contract or rather a temporary agreement for the joint operation of their roads. It is, in its provisions, substantially the same as the previous contract which was declared illegal by the New Hampshire Supreme Court, but is so changed in form that it is belied to be free from the objections made by the Court against the former contract.

Brattleboro & Wilmington.—It is proposed to build a railroad from Brattleboro, Vt., westward to Wilmington, about 20 miles. Meetings have been held and some stock subscriptions secured along the line.

Brunswick, Mobile & New Orleans.—This company

has been organized to build a railroad from the Chattahoochie River at Columbus, Ala., westward by Elba and Newton to Pollard on the Mobile & Montgomery road. It will be about 130 miles long, and is intended to be an extension of the Brunswick & Albany road.

Canada Junction.—This company has been organized to build a branch of the St. Johnsbury & Lake Champlain road from Sheldon Junction, Vt., by Sheldon to Frelighsburg, P. Q. It will be 11 miles long, and will connect the St. Johnsbury & Lake Champlain and the Montreal, Portland & Boston roads.

Central, of New Jersey.—The following notice has been published by the stockholders who issued the independent call for a meeting:

"To avoid the possibility of delay by litigation as to the validity of the election of directors, advertised to be held on Friday, May 5, the undersigned, acting in behalf of stockholders representing a majority of the entire capital stock of the company, have advised that the election be postponed until it can be held under a peremptory order from the Chancellor of New Jersey, for which immediate application will be made. It is believed that in this mode an election will be secured at a very early day, and litigation as to the result will be avoided.

"Proxies given for the intended election on the 5th will be good for the day on which it shall be held."

Central Vermont.—The final hearing in the Langdon suit is in progress this week before the Vermont Supreme Court. It will probably be some time before any decision is given.

Chesapeake & Ohio.—Regular passenger trains began to run over the extension from Richmond, Va., to Newport News on May 1.

On May 14 the time of the through trains from Richmond westward will be shortened up several hours, and through cars will be put on to run between Richmond, Louisville and Cincinnati.

Chicago & Atlantic.—On the Chicago end of this road the connection with the Chicago & Western Indiana, over which the road will enter Chicago, is nearly finished. The junction is near Englewood, the new road crossing the Calumet River at Hammond. Work will be pushed eastward from this point as well as westward from Marion.

Chicago, Burlington & Quincy.—On the Denver extension of the Republican Valley Division in Nebraska regular trains now run to Akron, 131¼ miles westward from Culbertson, Neb., and 302¼ miles from Hastings.

Chicago, Milwaukee & St. Paul.—Trains on the Hastings & Dakota Division now run to Ellendale, Dak., 12 miles from the late terminus at Frederick.

The Stillwater Branch has been opened for traffic from the River Division at Hastings, Minn., northward up the west side of the Mississippi to Lakeland, 18 miles.

Chicago & Northwestern.—The 21 miles of the Des Moines Division from Ames, Ia., to Callanan is soon to be changed from 3 ft. to standard gauge. The gauge of this division south of Ames was changed some time ago.

Chicago & West Michigan.—The Southern extension of this road is now completed to Laporte, Ind., 15 miles southward from the late terminus at New Buffalo, Mich. Trains will run regularly to the new terminus in a few days. Work will soon be begun on the extension from Laporte to Lacrosse.

Cincinnati & Eastern.—This road is now open for business to Newport, in Adams County, O., 10 miles east of the late terminus at Irvington and 72 miles from Cincinnati. A considerable force is at work grading the 40 miles from Newport to Portsmouth.

Cincinnati, Hamilton & Dayton.—The affairs of the stockholders of this company appear to be still in a somewhat unsettled state. Cincinnati dispatches report that not all the pooled stock has been delivered to Mr. Jewett, and that some of the holders are drawing out, or are demanding cash for their stock, refusing to accept part payment in 6 per cent. certificates, which the agreement provides for. Another statement or report is that Mr. Jewett has been offered a considerable amount of stock outside of the pool, and that he will have no trouble in securing all the stock he needs. It is also asserted that the stock bought by the Seney syndicate will be voted for the Erie.

Cleveland, Mount Vernon & Delaware.—Mr. George D. Walker, lately made Receiver, issues the following circular:

"The undersigned having been appointed Receiver of the Cleveland, Mount Vernon & Delaware Railroad and all the personal property and assets of the Cleveland, Mount Vernon & Delaware Railroad Company and the late Receiver thereof, and is now operating the said railroad as such Receiver, all the officers, agents and employés now employed upon the road will be continued in their several positions for the present as the officers, agents and employés of the Receiver, and will report to their superior officers and me as Receiver. All business is to be done under the name of the undersigned as Receiver until further orders. All payments due, or to become due to the Cleveland, Mount Vernon & Delaware Railroad Company, or to the former Receiver, or the Cleveland, Akron & Columbus Railroad Company, are covered by the Receivership, and are to be receipted for in the name of the Receiver."

Cohuttah Valley.—The route of this proposed road is from Cartersville, Ga., north by Spring Place and the Cohuttah Valley to Ooltewah, Tenn., on the East Tennessee, Virginia & Georgia road. The line is nearly parallel to the Western & Atlantic, and from 10 to 20 miles east of that road.

Connotton Valley.—The following circular has been sent out, dated April 29, to the bondholders of the Connotton Valley and the Connotton Valley & Straitsville companies: "The number of bonds deposited under the plan of the reorganization of the securities of the above-named companies, not being considered sufficient to warrant action by the meeting of the stockholders of the Connotton Valley Railway company, called this day for the purpose of ratifying said plan, said meeting has been adjourned to Tuesday, May 9, in the hope that before that date the plan can be perfected by the surrender of the remaining bonds of the trustee, the Boston National Bank."

Danville & New River.—The town of Danville, Va., has voted $60,000 in aid of the extension of this road, on condition that Patrick County makes a subscription of $100,000.

Davenport, Iowa & Dakota.—The organization of this company has been completed, and surveys are to be made at once of the proposed line from Davenport, Ia., northwest to Tipton and Anamosa, about 60 miles.

East Tennessee, Virginia & Georgia.—The bridges on the extension of the North Carolina Division to Point Rock are completed and the connection with the Western North Carolina road made. Trains will soon begin to run through.

European & North American.—At a recent meeting the directors decided to build machine and repair shops at Mattawamkeag, Me., on the plans prepared by the engineer. The question of increasing the equipment was discussed, but no decision was reached. The board decided to advertise the lands granted the company by the state of Maine to be sold at public auction in the early fall. The sale will embrace a very large acreage.

Florida Tropical.—Work is progressing well on this road, and track is now laid from Ocala, Fla., the junction with the Peninsular road, southward 30 miles. Work is well advanced on the grading to Tampa, 70 miles further.

Ft. Worth & Denver City.—The tracklaying on this road is progressing steadily and the rails last week reached a point 45 miles northwest from Ft. Worth, Tex. The grading is done for some distance further.

Gainesville & Dalton Short Cut.—This company has been organized to build a railroad from Gainesville, Ga., on the Atlanta & Charlotte Air Line, westward to Dalton, a distance of 85 miles. It will pass through a rich, but hilly and difficult country.

Galveston, Harrisburg & San Antonio.—On the line from El Paso, Tex., eastward track is now laid to a point 290 miles from El Paso, an extension of 55 miles.

On the eastern end the track is laid to Eagle Pass, on the Rio Grande, 45 miles southward from Eagle Pass Junction and 185 miles from San Antonio. The line from the Junction to Eagle Pass is a branch of the main line to El Paso.

Georgia & Florida Midland.—This company has filed articles of incorporation for a railroad from a point on the St. Johns River in Duval County, Fla., through the counties of Bradford, Alachua, LaFayette, Taylor, Madison, Jefferson, Leon and Gadsden to the Georgia line. The distance is about 225 miles.

Great Western, of Canada.—The following dispatch from London, England, May 1, has been received: "At a meeting of the Great Western Board yesterday the action taken by shareholders at their recent meeting was considered. The present board, in accordance with their promise at that meeting, formally resigned their offices, and a new board was elected at a shareholders' meeting, which will immediately assume control and take necessary steps to carry out the fusion of the road with the Grand Trunk Railway."

Houston, East & West Texas.—This company makes the following statement for the six months ending March 31:

Gross earnings	$111,581
Expenses (46.12 per cent.)	51,486
Net earnings	$60,095

The total amount of bonds outstanding is $762,000, on which the yearly interest charge is $53,340, or $26,670 for the six months.

Hudson Tunnel Railroad.—The engineers in charge of the work on the tunnel under the Hudson River, report that very satisfactory progress was made last month. On the New Jersey side the heading of the north tunnel has been advanced more than 100 ft., and the tunnel is now bricked up 925 ft. out from the caisson. The heading of the tunnel is about 12 ft. beyond this point, and the men are now working through silt, which is firm and hard and presents no difficulty. It is expected that before the first of June the first 1,000 ft. of tunnel work will be completed. At this point a cross tunnel will be built, which will connect with the south tunnel. No work has been done on the south tunnel for some time, but it is probable that as soon as the heading of the north tunnel has been advanced out 1,000 ft., and the cross tunnel built, the work will be pushed forward rapidly on the south tunnel.

On the New York side of the river the work has been delayed by the loose, watery sand through which the tunnel will run for the first 100 ft., but a beginning has been made, and it is now believed that the tunnel can be safely carried into the silt.

Indiana, Bloomington & Western.—Tracklaying has been completed on the extension from Indianapolis, Ind., eastward to Springfield, O., which connects the main line of the road with the Ohio Division. It is 138 miles long, and has easy grades and light curvature. The track is being ballasted as fast as possible and regular trains will be put on as soon as it is in complete order.

This extension gives the company 693 miles of road, besides the 109 miles of the Ohio Southern, which it controls.

Notice is given that new consolidated mortgage income bonds are now ready for delivery at the office of the company, No. 115 Broadway, New York, in exchange for the old income bonds, when presented in sums of $1,000, or multiples thereof. Coupons are attached to the new bonds, representing the installment of interest to be paid July 1, 1882, and all subsequent installments.

Kentucky Central.—It is stated that this company has bought the Richmond Branch of the Louisville & Nashville road, taking possession May 1. This branch extends from Richmond Junction, Ky., on the Knoxville Branch, to Richmond, 34 miles. Part of it can be used as part of the Kentucky Central's extension southward.

Lehigh & Hudson River.—This company has completed and are now operating 24 miles of its line, between Andover, N. J., and Belvidere, regular trains being put on May 1. The balance of the grading, from Andover to Franklin Furnace, will be finished within the next 30 days, and it is expected that the line will be ready for through trains from Belvidere to Greycourt, on the Erie road, by July 1. Until then, trains will run in connection with the Sussex Railroad between Franklin and Andover.

Louisville & Nashville.—A dispatch announces the sale of the Richmond Branch of this road, 34 miles long, to the Kentucky Central Company. The terms of the sale are said to be $400,000 cash.

Memphis, Selma & Brunswick.—At a recent meeting it was decided to advertise at once for bids for the construction of the road from Memphis, Tenn., to Holly Springs, Miss., to be completed by Oct. 1, next, and to have the road located from Holly Springs to the Alabama state line.

Milford, Franklin & Providence.—This company has been organized to build a railroad from the Milford & Woonsocket road in Bellingham, Mass., to the New York & New England in Franklin. The distance is 4¾ miles.

Millersburg Branch.—This company has filed articles of incorporation for a railroad from Millersburg, in Warrick County, Ind., to a point on the Louisville, Evansville & St. Louis road. It will be 4½ miles long.

Milwaukee & Northern.—The officers of this company are preparing the organization to take charge of and operate the road when the lease to the Wisconsin Central expires, on Aug. 1 next.

Minneapolis & St. Louis.—It is announced that a controlling interest in this company has been sold by C. C. Washburn and others to the Chicago, Rock Island & Pacific and the Chicago, St. Paul, Minneapolis & Omaha companies, who will hereafter manage the road for their joint interest. The price paid for the stock is not known. It is said that the late managers found that they had undertaken greater obligations in the extension of the road than they were able to carry, and that it became necessary for them to abandon their shares or transfer the road to others with ability to carry them through.

Missouri, Kansas & Texas.—Track on the Southwestern Extension is now completed to Taylor, Tex., the junction with the International & Great Northern. Taylor is 15 miles beyond the point last noted, 72 miles from Waco, 161 miles from Ft. Worth and 257 miles from Denison.

Missouri Pacific.—A mortgage for $20,184,000 has been recorded on the Omaha Extension in all the counties through which that line passes. It is not stated whether it covers that line alone; if it does, the amount appears enormous, being over $137,000 a mile.

Mobile & Spring Hill.—This short suburban road, running eight miles out of Mobile, has been sold to Mr. Fred. Wolffe, agent of the Erlanger syndicate. The object of the purchase, it is said, is to secure the entrance into Mobile, and to extend the road to a connection with the New Orleans & Northeastern, making a second line between Mobile and New Orleans.

New Bonds.—New issues of bonds are offered on the market as follows:

Gulf, Colorado & Santa Fe 7 per cent. first-mortgage bonds are offered by J. S. Kennedy & Co., of New York, at 107 and interest. The amount offered is not stated; the issue is limited to $12,000 per mile of completed road.

New York, Texas & Mexican bonds are offered in London as well as New York. They have 30 years to run, bear 6 per cent. interest, and the London prospectus gives the total issue at $8,000,000, of which $3,000,000 are now offered for subscription. The road is to run from Richmond, Tex., to Brownsville, 350 miles, and has a state land grant. A few miles have been completed and a few miles more are graded.

New York & New England.—The reported sale of the Woonsocket Division to the Boston & Albany, telegraphed from Boston last week, had but a slight foundation. The Boston *Advertiser* gives the following statement:

"It is understood that the Boston & Albany directors have formally offered to buy the piece of road of the Woonsocket Division of the New York & New England, from Brookline to the junction between Newton Falls and Newton Highlands, which it has some time desired to utilize in connection with the Newton circuit; and that the directors of the New York & New England have referred the matter to the executive committee with full powers. The Boston & Albany directors, it is stated, are willing to leave the question of the price to be paid to arbitrators, and to this the New York & New England directors are willing to accede. The only question likely to arise for settlement, beyond that of price, is in relation to the rights of the New York & New England in running its trains from Woonsocket. The New York & New England, while not wishing to sell this piece of road, is ready to entertain the proposition if terms can be arranged to its satisfaction."

New York, New Haven & Hartford.—This company has had surveys made with a view to straightening its road between Stamford and Williamsbridge. It has not been decided as yet what work will be done, but it is said that a new line will be built at several points, to avoid curves in the present road.

Ohio Central.—Surveys are being made for a short branch from this road to the city of Newark, O. It will be about three miles long.

Pennsylvania.—At its regular meeting this week the board decided to make the semi-annual dividend of 4 per cent., and also decided to offer new stock to the stockholders at par in the proportion of 8 per cent. of the number of shares registered to each on April 29. The option of subscribing holds good until June 15, and all stock taken must be paid for by that date. The amount received for the new stock will be used for new equipment, additional tracks and other improvements. Fractional rights will be accepted as one share. Eight per cent. of the present capital stock is 124,276 shares, which the fractional rights will probably increase to about 125,000 shares. The capital stock will then be about $83,900,000.

The Redstone Branch is all graded from Brownsville, Pa., the terminus of the Monongahela Division, east to Uniontown on the Southwest Pennsylvania Branch, 17 miles, through a coke country. Track has been laid from Brownsville east eight miles.

Pensacola & Atlantic.—Work is progressing steadily on this road. The Blackwater draw-bridge is being erected, and nearly half of the pile bridge at Chattahoochie is done. Tracklaying will soon be begun from Chattahoochie eastward. Track is now laid from Milton west 10 miles and is progressing steadily towards Pensacola.

Peoria & Springfield.—The Illinois Supreme Court has granted a stay of proceedings until the June term of court in the suit against this road in which judgment was lately given for the bondholders.

Pittsburgh Junction.—The Pittsburgh *Telegraph* says: "Agreements have been perfected and contracts signed which have a most important bearing on the railway system of this city, and the Baltimore & Ohio, the Pittsburgh & Western and the Junction in particular. The last-named road is of importance to the other roads, and by the terms of the contract the Junction is guaranteed a minimum business of between $245,000 and $250,000 per annum. One million in bonds will be issued immediately and bear 6 per cent. interest. The Junction is to be completed in ten months, and before that time the Pittsburgh & Western will be changed to standard gauge and its Western connections will be completed. It will then be ready to pour its traffic over the Junction eastwardly, and the Baltimore & Ohio will send its west-bound traffic over the same little link. The Junction's track at Wainwright's Island will be the transfer yard for this large business, and the 3,000 feet of river front at that point will, on the completion of the Davis Island dam, be another important element in this consolidation of interests."

Portland & Ogdensburg.—The Mercantile Trust Company, of New York, has filed an amended bill in the United States Circuit Court at Portsmouth, N. H. The new bill makes the trustees under the first mortgage defendants jointly with the company. The Trust Company holds $80,000 bonds of the issue of Nov. 1, 1871, and claims that the earnings of the road in New Hampshire should have been taken to pay interest on those bonds, but were used to pay interest on bonds secured on the road in Maine.

Portland & Rochester.—The following circular is dated Portland, Me., April 28:

"The Portland & Rochester Railroad Company and property, having been purchased by the Portland & Rochester Railroad, that corporation will, on the 1st day of May, 1882, take possession of the property so purchased by it, and thereafter operate the same. All accounts and transactions occurring on and after that date will be kept in the name of the Portland & Rochester Railroad.

"The present officers, agents and employés of the Receiver of the Portland & Rochester Railroad Company will continue to discharge the duties of their respective positions for the new corporation, until otherwise ordered.

"All accounts or settlements for business due in the name of Geo. P. Wescott, Receiver of the Portland & Rochester Railroad Company, up to and including April 30, 1882, will be adjusted and settled, as heretofore, with the Receiver; and reports and remittances will be made, as formerly, to and by the respective officers of the Receiver.

"It being desirable to close the accounts of the receivership as rapidly as practical, all companies and individuals having business with the Receiver are respectfully requested to make reports and settlements promptly."

The new company is organized by the bondholders, creditors and stockholders of the old company under special charter from the states of Maine and New Hampshire. It has no funded debt.

Ridgeway & Clearfield.—This company has been organized to build a branch road from the Philadelphia & Erie at Ridgeway, Pa., south by east to Falls Creek in Clearfield County. It will be 28 miles long, and will reach a new coal district.

Rye Beach.—This company has been organized to build a short branch line connecting Rye Beach, N. H., a well-known summer resort, with the Eastern Railroad.

St. Clairsville & Northern.—Arrangements have been completed for the running of trains over this road, on which the track has been laid some time. It is four miles long, from St. Clairsville, O., to a connection with the Cleveland, Tuscarawas Valley & Wheeling road.

St. Louis, Ft. Scott & Wichita.—This road is now completed and trains are running to Toronto, Kan., 15 miles west of the late terminus at Yates Centre and 77 miles from Ft. Scott. Work west of Toronto is progressing well and the company expects to have track laid this month to Eureka, the county seat of Greenwood County. The company now has on the road 5 engines, 6 passenger cars, 244 box and 150 flat cars.

St. Louis & Western.—A last effort is to be made to revive this project (formerly the Laclede & Ft. Scott) for a road from St. Louis to Ft. Scott. The prospect of success is small.

Securities on the New York Stock Exchange.—The following securities have been put on the lists at the New York Stock Exchange:

Chicago, Milwaukee & St. Paul, $1,360,000 new 5 per cent. Chicago & Lake Superior Division bonds; issued to buy the Portage & Lake Superior road; $240,000 additional Mineral Point Division 5 per cent. bonds.

Chicago & Northwestern, $2,475,000 additional sinking fund 5 per cent. bonds issued upon new roads.

Cincinnati, New Orleans & Texas Pacific, $3,000,000 stock.

New Orleans Pacific, $400,000 additional first-mortgage bonds, on extension of 20 miles now in progress.

New York, Chicago & St. Louis, $28,000,000 common stock, $22,000,000 preferred stock and $7,500,000 first-mortgage 6 per cent. bonds. This is the first appearance of the company's securities.

St. Louis, Iron Mountain & Southern, $514,000 additional consolidated 5 per cent. bonds, specially secured on the new branch from Gurdon, Ark., to Camden.

Shenandoah Valley.—On the extension from Waynesboro, Va., up the valley to Roanoke, where the connection with the Norfolk & Western is made, the grading is all finished, or very nearly so, and track has been laid on 80 miles, leaving only 15 miles to be laid. This work is in progress, and the road is to be opened for traffic about June 1. It passes through a rich agricultural and mineral country, and will complete a new northern connection for the East Tennessee system and its connections.

The road is built very solidly, with oak ties, steel rails, stone ballast and iron bridges. Its completion will make the Shenandoah Valley road 239 miles long.

Toledo, Cincinnati & St. Louis.—Contracts for the grading and tracklaying still to be done to complete this road to East St. Louis (about 70 miles) have been let to J. H. Beeson, of Atchison, Kan., and H. McPherson, of St. Louis. They are to begin work at once.

Vermont & Canada.—The Boston *Advertiser* says: "A suit in equity has just been brought by the Vermont & Canada Railroad Company against the Central Vermont Railroad Company by bill filed in the United States Circuit Court for the District of Vermont, praying (1) for a decree that the charter of the Central, so far as it confers powers to operate the Canada road, is invalid, because it impairs the contract rights of the Canada; (2) for a decree that the act of the Franklin County (Vt.) Court of Chancery in appointing the Central receiver of the Canada, in 1873, was not such due process of law as the constitution requires before any person shall be deprived of the possession of his property; (3) for an order restoring to the Canada Company the possession of its road, and (4) for an injunction to restrain the Central from interfering. * * *

"The anomalous character of this long litigation has involved the Vermont court, or at least a portion of it, in serious distrust, not only here in Massachusetts, where most of the sufferers reside, but in Vermont as well. Some of the mortgage bondholders despaired of justice before that tribunal several years ago, and began a suit for foreclosure in the United States Court. The managers demurred to the jurisdiction, because they claimed to be receivers under the state court. But after two exhaustive hearings the Court took jurisdiction, and it is expected that final hearing on the merits will be held by Judges Blatchford and Wheeler at Windsor week after next—just after the hearing in the state court. As this suit was begun before the Langdon suit, the bondholders feel confident of holding their property.

"In view of the last decision of the state court, and of a partial reconstruction of the bench since the decision of '77, the Canada Company, like the bondholders, has at last lost confidence in that quarter, and has begun a suit in the federal court to test the constitutionality of the Central Vermont charter and the validity of the acts of the state court.

"The bill is long, and sets forth the history above outlined. It proceeds upon the ground that, since the receivership ended in 1861, it was not a due process of law to invest the Central Vermont Company with receivership powers without the bringing of a new suit; also that the Central Vermont charter and the use that has been made of it impaired the obligation of the contract with the Canada Company, and is therefore void under Section 10, Article 1, of the Constitution of the United States. The bill also alleges that the proceeding under which the Central Vermont was appointed receiver was irregular, not filed or made returnable at any regular term day, begun without notice to the Canada Company, summarily enforced and no appeal granted—all of which, it is claimed, was not a due process of law; and, as the Canada road was only leased to the Central, the bill asserts that the managers' debts were not the lessors' debts, and that the attempt to enforce them violates its chartered right."

ANNUAL REPORTS.

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Chicago, St. Paul, Minneapolis & Omaha.

The total mileage of this road, Dec. 31, 1881, is given by the first annual report as follows:

	Miles.	
Eastern Division:		
Elroy to St. Paul	197.60	
Stillwater Branch	3.89	
South Stillwater line	4.39	
River Falls Branch	12.21	
Menomonie "	3.01	
Eau Claire "	2.74	
Neillsville "	14.00	
		237.75
Northern Division:		
North Wisconsin Junction to Cable		120.60
St. Paul Division:		
St. Paul to St. James	122.00	
Lake Crystal to Elmore	44.00	
		166.00
Sioux City Division:		
St. James to Sioux City	148.00	
Sioux Falls Branch	98.00	
Black Hills "	44.00	
Rock River "	28.00	
		318.00
Nebraska Division:		
Missouri River transfer	2.25	
Covington to Omaha	125.50	
Niobrara Branch	15.82	
Norfolk Branch to Wayne	18.00	
		161.57
Total		1.003.32

The mileage owned is 979.32 miles; leased, 24 miles. During 1881 there were 57 miles of new road constructed the average mileage worked for that year was 967.87 miles. There were, on Dec. 31 last, 481.92 miles laid with steel and 521.40 miles with iron rails.

Additions to the road to be made during the current year are the extension of the North Wisconsin line to Lake Superior, 40 miles; the line from Chippewa Falls, Wis., to Superior City, 141 miles, and the line from Emerson, Neb., to Norfolk, 47 miles. Of this total of 228 miles, 112.64 miles have already this year been graded, and track has been laid on 82.64 miles.

For the Wisconsin lines the company will be entitled to receive 553,600 acres of land.

The equipment consists of 125 locomotives; 52 passenger, 3 sleeping, 3 mail and 29 baggage cars; 2,386 box, 60 stock, 965 flat and 73 caboose cars; 1 officers' car, 1 pay car and 10 service cars. Orders are now being filled for 25 locomotives, 7 passenger, 200 box and 350 flat cars.

The company already owns 1,233,024 acres of land and has in its treasury land contracts and bills receivable for land sold amounting to $1,104,343.30, all bearing interest.

The general balance sheet is as follows:

Common stock		$17,205,833.33
Preferred stock		9,848,333.33
Total stock		$27,054,166.66
Bonded debt		17,865,175.00
Vouchers, pay-rolls, accrued interest		906,626.72
Bills payable for land, etc.		72,497.32
January dividend		168,309.75
Income account, balance		609,547.05
Total		$46,676,322.50
Cost of road and equipment	$41,441,154.42	
Stocks and bonds of this Co.	2,599,130.73	
Bills receivable, stocks and bonds owned, etc.	1,215,504.58	
Accounts and balances	342,129.75	
Materials	445,906.55	
Cash	632,496.47	
		46,676,322.50

The land contracts and bills receivable are not included in the assets above.

The funded debt consists of $3,000,000 Chicago, St. Paul & Minneapolis first-mortgage bonds; $800,000 North Wisconsin first-mortgage bonds; $125,000 Hudson & River Falls first-mortgage bonds; $6,080,000 St. Paul & Sioux City first-mortgage bonds; $324,800 St. Paul, Stillwater & Taylor's Falls first-mortgage bonds; $30,000 St. Paul depot bonds; $75,000 Minneapolis & Eastern bonds guaranteed; $7,420,375 Chicago, St. Paul, Minneapolis & Omaha consolidated bonds. The yearly interest charge is $1,074,458.50.

Expenditures during 1881 for permanent improvements and additions to the property were $1,517,133.38 in all, the largest items being for new steel rails, new shops and machinery, new bridges and new sidings.

No report was made for 1880 when the road was in process of reorganization and development, and no comparisons can be made.

For a portion of the year the St. Paul & Sioux City Railroad was operated as a separate company, but in May, 1881, it was deeded to the Chicago, St. Paul, Minneapolis & Omaha Railway Company, and the operation of the two roads consolidated. For convenience of future comparisons this report is made as if this consolidation had taken effect Jan. 1, 1881.

The traffic for the year was as follows:

Train miles	3,103,760
Cost per train mile	89 cts.
Passengers carried	622,819
Passenger miles	38,706,890
Tons freight moved	1,476,129
Ton miles	207,790,338
Average receipt per passenger per mile	2.43 cts.
" " per ton per mile	1.40 "

Of the tonnage carried 25.09 per cent. was grain, 30.28 per cent. lumber and forest products and 3.32 per cent. coal.

The earnings for the year were as follows:

Freight		$2,913,520.73
Passengers		944,329.23
Mail and express		119,461.41
Miscellaneous		44,649.99
Total ($4,155.48 per mile)		$4,021,961.36
Expenses (69.03 per cent.)		2,776,460.43
Net earnings ($1,286.85 per mile)		$1,245,500.93
Miscellaneous receipts		78,584.70
Net receipts from land grant		504,143.52
Total		$1,828,229.15
Rentals	$53,059.34	
Interest on bonds	893,536.13	
Dividends, 7 per cent., on preferred stock	672,736.75	
		1,619,332.22
Surplus for the year		$208,806.93
Balance, Jan. 1, 1881		400,650.12
Balance of income, Jan. 1, 1882		$609,547.05

The report says: "The expenses for operating the road for the past year were greatly increased in consequence of the extreme fall of snow during the winter of 1880–81, and the resulting floods later; conditions never known before. During the winter, the Eastern Division (from Elroy to St. Paul) was closed for five days, the division between St. Paul and St. James for 57 days; the division between St. James and Sioux City for 85 days, and the Nebraska division for 90 days; during all of which time, in attempts to keep the road open, the expenses were much greater than they would have been had the weather permitted regular operations, and the earnings were practically nothing. I think it is safe to assume that the net earnings from this phenomenal condition were decreased $600,000.

"The cost of fuel last year on all of this road southwest of St. Paul was nearly, if not quite, double the average cost, owing to the severity of the winter, the snow blockade and strikes among the miners, the increased quantity required for consumption by the larger population and longer winter, as well as the greater number of miles of railroad dependent on the same mines for their supply of coal for the operation of their roads. As is the usual course after high prices, more mines are being opened, and the price of coal is cheapening."

With regard to the new lines the report says: "By reference to the map it will be seen that the roads which the company now has under construction are not branches, in the ordinary sense of the term, but are lines either connecting its system of railway with Lake Superior at important points, where the lake transportation steamers owned by and running in connection with the Eastern trunk lines of railroad receive and deliver cargoes, as well as where a heavy lumber traffic originates, or joining its present system of railroads with important railways running west, two of them through to the Pacific Coast.

"The Superior City line (running from Chippewa Falls to Superior City) will connect, on common depot grounds, with the Northern Pacific Railroad, which has already built west from Superior City some 800 miles, and has contracted to have its whole line through to Portland, Or., completed early next year.

"The extension of the North Wisconsin line will carry our system to Lake Superior at or near Bayfield.

"The Norfolk line (running from Emerson, Neb., to Norfolk) will connect, on common depot grounds, with the Union Pacific Railway system, and with the Sioux City & Pacific Railroad system, the latter extending in a northwesterly direction several hundred miles.

"The line finished during the year from Lake Crystal to the Iowa state line is now connected with the Chicago & Northwestern system, and forms a through line from St. Paul to Des Moines, Ia. This line should have an especial value to us later, as an additional point for receiving coal from the Iowa mines. * * * *

"In addition to the new road built during the past year, this company has become the owner of valuable depot and transfer grounds at Minneapolis; has made extensive improvements in St. Paul for doing its business, built large fire-proof machine shops in St. Paul, has placed therein a full supply of the most modern tools, built a brick engine-house and laid out an extensive freight yard and transfer grounds at East Eau Claire.

"It has spent a large amount in building iron bridges across the Eau Claire, Chippewa and St. Croix rivers, in Wisconsin, so that the line from Elroy to St. Paul will, within a few months, have no important bridge on it that is not a first-class iron structure, with stone piers and abutments."

Lake Shore & Michigan Southern.

This company's report for the year 1881 shows that the road operated remains as in the previous year, as follows:

	Miles.
Main line, Buffalo to Chicago	540.49
Five branches owned	324.38
Three proprietary roads, owned, but under separate organizations	160.07
Total owned	1,024.94
Three leased roads	151.88
Total	1,176.82

There are 266.24 miles second track and 503.60 miles sidings, making in all 1,946.66 miles of track, of which 1,238 miles are laid with steel, an increase of 113 miles of steel last year.

The equipment consists of 532 locomotives; 100 passenger, 33 second-class and smoking, 10 smoking and baggage, 21 emigrant, 29 postal, 10 baggage and mail and 55 baggage cars; 8,869 box, 1,717 stock, 291 oil, 2,061 platform, 2,409 coal and 257 caboose cars; 2 pay cars, 10 derricks and 144 ballast cars.

The condensed balance sheet is as follows:

Ten per cent. guaranteed stock		$583,500.00
Common stock		49,466,500.00
Total stock		$50,000,000.00
Funded debt		36,915,000.00
" " proprietary roads		1,524,000.00
December liabilities (paid in January)		1,115,402.30
February dividend		1,016,005.00
Income account		4,712,490.31
Total		$95,282,897.61
Road and equipment	$82,650,000.00	
Proprietary roads	3,348,600.00	
Jamestown & Franklin (leased)	2,112,169.19	
Chi. & Can. Southern	660,000.00	
Stocks owned	1,615,968.32	
Bonds "	1,143,918.39	
Pacific Hotel, Chicago	428,212.50	
Valley R. R., Cleveland	131,876.99	
General office property, etc	305,797.91	
Supplies	1,166,890.03	
Uncollected earnings	994,795.23	
Cash	724,669.05	
		95,282,897.61

The stocks owned include $268,200 of the company's own stock. Of the bonds $22,250,000 are first-mortgage bonds of various issues and $14,665,000 are second-mortgage bonds. All bear 7 per cent. interest, making the yearly charge $2,584,050; the yearly interest on the bonds of the proprietary roads is $108,680.

The traffic for the year was as follows:

Train-miles:	1881.	1880.	P. c. of increase.
Passenger	2,964,058	2,549,081	16.3
Freight	8,297,773	7,481,489	10.9
Service and switching	4,618,906	3,555,637	29.8
Total	15,880,737	13,586,207	16 9
Passengers carried	3,682,006	3,313,485	11.1
Passenger miles	207,953,215	176,148,767	18.1
Tons freight carried	9,164,508	8,350,336	9.8
Ton-miles	2,021,775,408	1,851,166,018	9.2
Av. train-load:			
Passengers, No.	70.16	69.14	1.5
Freight, tons	243.65	247.43	*1.5

* Decrease.

The average mileage per engine in 1881 was 29,573 miles. Locomotive service cost 18.64 cents per mile run.

Of the passenger miles 31.7 per cent. were of through passengers. The average way passenger journey was 39.5 miles.

Of the ton-miles 57.2 per cent. were of east-bound and 42.8 per cent. of west-bound freight. The average freight haul was 220.6 miles.

The average receipts per unit of traffic were as follows, in cents:

Passenger-mile:	1881.	1882.	Decrease.	P. c.
Through	1.220	1.532	0.312	20.4
Way	2.345	2.349	0.004	0.2
Average of all	1.988	2.135	0.147	6.9
Ton mile:				
East-bound	0.592	0.747	0.155	20.7
West-bound	0.651	0.756	0.105	13.9
Average of all	0.617	0.750	0.133	17.7

The average receipt per freight train-mile was 164.31 cents gross and 55.57 cents net, against 188.16 and 80.49 cents in 1880.

The average passenger train earned 177.34 cents gross and 77.68 cents net, against 178.18 and 85.89 cents in 1880.

The earnings for the year were as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Freight	$12,659,987	$14,077,295	D. $1,417,308	10.1
Passengers	4,134,789	3,761,008	I. 373,781	9.9
Mail	699,416	537,841	I. 161,575	30.0
Express	327,146	243,052	I. 84,094	34.6
Rents	91,392	80,650	I. 10,742	13.3
Other	58,661	49,615	I. 9,046	18.1
Total	$17,971,391	$18,749,461	D. $778,070	4.2
Expenses	11,278,429	10,418,105	I. 860,324	8.3
Net earnings	$6,692,962	$8,331,356	D. $1,638,394	19.7
Gross earnings per mile	15,261	15,922	D. 661	4.2
Net earnings per mile	5,684	7,076	D. 1,392	19.7
Per cent. of expen's	62.76	55.56	I. 7.20	....

It will be observed that the decrease in earnings is entirely in freight.

The Chief Engineer reports 10,765 tons steel rails, 291 tons iron rails, and 727,001 new ties used in renewals. There were 87.49 miles of new fence built and 162.53 miles of road have been newly ballasted.

The income account was as follows, condensed:

Net earnings, as above		$6,692,962.14
Interest and dividends on assets		214,129.15
Premium on Chicago Union Stock Yards stock sold		450,000.00
Premium on second-mortgage bonds sold		400,000.00
Other items		24,546.48
Total		$7,781,637.77
Interest on bonds	$2,612,230.00	
Rental of leased roads	273,924.68	
Dividends, guaranteed stock, 10 per cent	53,350.00	
Dividends, common stock, 8 per cent.	3,957,320.00	
Judgment, dividends on guaranteed stock	127,195.60	
Judgment, Michigan taxes	72,401.85	
New engines, less old ones sold	137,024.14	
New cars	537,924.89	
		7,771,371.16
Balance, surplus for the year		$10,266.61
Balance, Jan. 1, 1881		4,702,223.70
Balance of income, Jan. 1, 1882		$4,712,490.31

President Vanderbilt's report gives the following statements:

"The construction account was increased in 1881 by $900,000, as follows:

Second track, 18.08 miles	$248,545.05
Side tracks, 36.21 miles	330,027.02
Reduction of grades and change of line	142,510.70
Real estate, Chicago	60,000.00
" " other points	7,621.49
New iron and stone bridges	111,295.74
Total	$900,000.00

"This increased the construction account from $65,600,000 to $66,500,000.

"The construction account of the Detroit, Monroe & Toledo Railroad, owned by this company, was increased $86,000 for additional facilities at Detroit, which could not be dispensed with any longer.

"A substantial and commodious general office building is being erected at Cleveland. The amount expended on this structure up to Dec. 21 was $85,018.30, which stands charged to the asset in the balance sheet called 'General office property and other real estate.' The structure, when completed, will cost about $120,000, and it is expected that it will be ready for occupancy by May 1, 1882.

"During the three years, 1879, 1880 and 1881 very large additions have been made to the equipment. The number of locomotives has been increased from 495 to 532, besides the purchase of 22 to replace a like number worn out and sold, the net cost of all being $514,055.14.

"The number of cars of all kinds has been increased from 10,546 to 16,018, equal to 5,472 cars or 52 per cent. increase, at a cost of $3,179,379, making a total amount invested in equipment in the three years $3,993,434.14. Of this large sum only $1,772,000 was charged to equipment account. The balance, $1,921, 434.14 was met from operating expenses and premium on assets and on the bonds of the company sold in 1881, as detailed in income account.

"The capital stock of the company is $50,000,000, to wit:

Guaranteed (10 per cent.)	5,335 Shares—$100	$533,500
Ordinary	494,655 Shares— 100	49,466,500
Total	500,000 Shares—$100	$50,000,000

"At the date of the last annual report the claim for dividends on $172,900 of the guaranteed (Michigan Southern) stock was still in litigation. During the year a decision adverse to the company was reached in the New York Supreme Court and judgments rendered amounting, with interest and costs, to $127,105.60, which have been paid.

"Of the ordinary stock the company owns $268,200, as stated in the balance sheet.

"The usual annual contribution of $250,000 to the sinking fund reduces the first mortgage debt from $22,500,000 to $22,250,000.

"To meet the large expenditures for construction and equipment, already detailed, it was found necessary to increase the second-mortgage debt $1,500,000 by the sale of that amount of bonds.

"The total funded debt now stands at $36,915,000, a net increase of $1,250,000 in 1881."

The financial results of the 12 years since the consolidation by which the present company was formed, are expressed in the following table:

Year.	Miles.	Gross earnings.	Net earnings.	Fixed charges.	Dividends, —per share.— Earned.	Paid.
		$	$	$	$	$
1870	1,013	13,509,236	5,140,415	1,828,897	9.60	8.00
1871	1,074	14,898,449	5,118,643	2,121,164	8.37	8.00
1872	1,136	17,699,935	5,860,409	2,201,459	8.55	8.00
1873	1,177	19,414,509	5,667,911	2,654,560	6.10	4.00
1874	1,177	17,146,131	5,993,760	3,008,193	6.04	3.25
1875	1,177	14,434,199	3,902,698	2,810,294	2.20	2.00
1876	1,177	13,949,177	4,374,341	2,759,989	3.26	3.25
1877	1,177	13,505,159	4,541,193	2,775,657	3.57	2.00
1878	1,177	13,979,766	4,493,165	2,718,792	5.61	4.00
1879	1,177	15,271,492	6,336,968	2,754,988	7.24	6.50
1880	1,177	18,749,461	8,331,356	2,750,374	11.28	8.00
1881	1,177	17,971,391	6,692,962	2,725,375	8.02	8.00

The following tables show in a condensed form the traffic of the road for the same period:

FREIGHT.

Year.	Tons.	Tons one mile.	Receipt per ton-mile. Cent.	Profit per ton-mile. Cent.
1870	2,978,725	574,035,571	1.504	.572
1871	3,784,525	733,670,696	1.391	.478
1872	4,443,092	924,844,140	1.374	.454
1873	5,176,661	1,053,927,189	1.335	.389
1874	5,221,267	999,342,081	1.180	.413
1875	5,022,490	943,236,161	1.010	.273
1876	5,635,167	1,133,834,828	.817	.256
1877	5,513,398	1,080,005,561	.864	.291
1878	6,098,445	1,340,467,821	.734	.260
1879	7,541,294	1,733,423,440	.642	.244
1880	8,350,336	1,851,166,018	.750	.315
1881	9,164,508	2,021,775,468	.617	.203

PASSENGERS.

Year.	Passengers carried.	Passengers one mile.	Receipt per pass. mile. Cent.	Profit per pass. mile. Cent.
1870	2,065,440	160,500,114	2.612	.904
1871	2,046,428	142,684,243	2.808	.869
1872	2,212,754	162,308,495	2.599	.785
1873	2,845,163	179,383,173	2.542	.664
1874	3,096,263	173,224,572	2.452	.774
1875	3,170,234	164,950,861	2.378	.554
1876	3,119,923	175,510,501	2.090	.575
1877	2,742,295	158,116,618	2.319	.672
1878	2,746,032	133,702,021	2.287	1.012
1879	2,822,121	141,162,317	3.223	1.049
1880	3,313,485	176,148,767	2.135	1.049
1881	3,682,006	207,953,215	1.988	.868

"The tonnage of freight moved in 1881 was the largest in the history of the company, exceeding even that of the prosperous year 1880 by 9¾ per cent.

"On the other hand the excessively low rates that ruled through two-thirds of the year, caused by the struggle between the Trunk Lines, and in which this company, from the geographical location of its line, was necessarily involved, carried the average rate per ton per mile down to the lowest figure yet recorded, cent 0.617 against cent 0.750 in 1880, a decrease of 17¾ per cent. As a necessary result the earnings from freight decreased $1,417,307, a little more than 10 per cent. (10.07). The earnings from every other source show a gratifying increase over the results of 1880.

"The passenger trains earned, from passengers, mails and express:

In 1881	$5,161,351.57
In 1880	4,541,901.33
Increase	$619,450.24

Which is 18.64 per cent.

"To accomplish this favorable result, there was carried the greatest number of passengers ever moved in one year on this road; and this was done without any accident of a serious nature.

"The large increase of business which has been spoken of necessitated the running of additional trains (freight trains 223,111 miles, passenger trains 361,319 miles in excess of the train mileage of 1880) and the moderate increase in operating expenses, $860,324, equal to but 8¼ per cent., is only what would naturally have been expected. The cost of the additional trains referred to, alone accounts for $608,700 of it, and the rest is more than accounted for by the following three items, bearing directly upon the maintenance and improvement of the property:

Steel rails used for renewals—

Laid in 1881, 10,765 tons, cost	$414,264.00
Laid in 1880, 7,590 tons, cost	298,308.00
Increase, 3,175 tons	$115,956.00
Cross ties renewed—	
In 1881, 727,000, cost	$288,258.00
In 1880, 533,470, cost	174,778.00
Increase, 193,530	$113,480.00
Repairs, buildings:	
In 1881	$313,470.00
In 1880	194,853.00
Increase	$218,617.00

"This account includes several new and important structures costing $50,863.44.

"The road, equipment and other property have in all respects been fully maintained at a high standard of efficiency, and the cost thereof has been borne by the operating expenses.

"Besides the effect of the struggle between the Trunk Lines, which has been spoken of, the result of the year was affected in no small degree by the somewhat remarkable peculiarities of the weather. The extremes of cold and snow, and of heat, drouth and floods were unusual, and involved consequences not the less material because not definitely ascertainable. It is confidently believed that in all these respects the coming year will be decidedly more favorable."

Great Western, of Canada.

The report of this company for the half-year ending Jan. 31 covers the system of 527 miles worked, including the Main Line of 229 miles from Detroit to Suspension Bridge, the Loop Line of 145.5 miles, 137.5 miles of branches owned and 15 miles of branches leased. There are also 296 miles of leased road, from which only the net results are reported.

Expenditures on capital account were £59,694, chiefly for additional equipment. The increase in balances of the renewal funds was £447, the total amount at credit of those funds on Jan. 31 being: Ferry steamers, £33,203; locomotive, £110,126; cars, £22,043; rail and bridge, £9,049; insurance fund, £2,055, with a debit balance of £38,102 to leased lines account, making the total credit balance of these funds £138,372.

The earnings, etc., were as follows:

	1881-82.	1880-81.	Inc. or Dec.	P.c.
Earnings	£476,233	£513,042	D. £36,809	7.2
Expenses	346,635	315,536	I. 31,099	9.9
Net earnings	£129,598	£197,506	D. $67,908	34.3
Interest, loss on leased lines, etc	99,644	98,734	I. 910	0.9
Balance	£29,454	£98,772	D. £68,818	69.5
Balance from previous year	6,833	847	I. 5,986	..
Total	£36,787	£99,619	D. £62,832	63.1

A dividend on Detroit, Grand Haven & Milwaukee stock, amounting to £9,247, was received, making a total of £46,-034. From this will be paid the half-year's dividend on 5 per cent. preference stock, and also a dividend of 0½ per cent. on common stock. These dividends will require £43,-117, leaving a balance of £2,917 to the current half year.

The decrease in earnings was entirely in freight, passenger and miscellaneous receipts showing an increase. The report says:

"The volume of traffic passing over the main line and branches exhibits a most satisfactory advance over the corresponding half year, the number of passengers having increased by 143,993, or 20 per cent., and the tonnage of freight 176,578, or 15 per cent., a large proportion of the latter having been derived from traffic interchanged with the Wabash, St. Louis & Pacific Railway Company. The diminution in the gross receipts amounting to 7¼ per cent., is, therefore, entirely attributable to reduced rates and fares, caused by the continuance during the half year of the contest between the trunk lines. The loss to this company arising from this contest cannot be estimated at less than £120,000. The local business has, on the whole, been progressive, the real loss having occurred in the reduced fares and rates on through business, over which this company exercises no control. For instance, with an increased foreign freight business of 135,000 tons, there has been a decrease in receipts of £47,000. In like manner 19,000 additional through passengers were practically carried for nothing. In respect of diminished earnings, this company occupies no exceptional position."

The increase in expenses was due to the large increase in traffic. The earnings and expenses per train mile have been as follows in the corresponding half of the last seven years:

Half-years ended.	Earnings per train mile.	Working expenses, excluding reserve funds. Per train mile.	Per cent. of gross receipts.
	s. d.	s. d.	
Jan. 31, 1876	5 7	3 11½	70.99
" 1877	4 9	3 8½	78.11
" 1878	5 2½	3 3½	63.19
" 1879	4 11¼	3 2¼	64.88
" 1880	5 5½	3 4½	61.77
" 1881	5 5¾	3 5¾	63.49
" 1882	4 8¼	3 5¼	73.39

"The average rates received for the carriage of through traffic have been lower than in any previous corresponding half-year in the history of the company. The nearest approach to the present state of things is to be found in the half-year ended Jan. 31, 1877, when the gross receipts amounted to 4s. 9d. per train mile, whereas in the past half-year they have amounted to 4s. 8¼d. As an evidence of progress it may be stated that while for the half-year ended Jan. 31, 1877, the net revenue fell short of the amount required to pay the interest on the bonded debt of the company by no less than £33,623, in the past half-year the net revenue, after the payment of all preference charges, shows an amount of £46,033 for division amongst the holders of preference and ordinary stock, an improvement in net revenue in the half-year ended Jan. 31, 1882, of nearly £80,-000."

The report further says: "The net receipts of the leased lines, after making the usual transfers to the reserve funds, amount to £7,671, being an improvement over the corresponding half year's figures of £694. The rent charges bond interest, etc., chargeable against the working of these lines amounts to the sum of £21,325, leaving an aggregate debit balance of £13,654. An amount of £4,374, being the agreed proportion of the half-year's traffic interchanged with the Wellington, Grey & Bruce Railway, will be applicable to the acquisition, on July 1 next, of the bonds of that company.

"The directors have introduced into the Dominion Parliament during the present session a carefully considered bill, containing, among other minor provisions, power to enable the shareholders to extend the nominal borrowing powers of the company, but with a distinct proviso that the interest thereon shall not exceed the amount of interest on the bond and debenture stock capital, authorized under previously existing statutes. This enactment, should it become law, may be of great advantage to the shareholders, the object being to permit of the consolidation of the entire loan capital of the company into one uniform stock."

The report refers at considerable length to the construction of the Ontario & Quebec line, from Toronto to Perth, 185 miles, which will give this road a connection with the Eastern Division of the Canadian Pacific, and a line to Montreal and Quebec in competition with the Grand Trunk.

The directors also protest strongly and at considerable length against any lease of the road to the Grand Trunk Company, of which much has been said of late. They say that no definite proposition has been received from the Grand Trunk, but that company relies chiefly upon securing control of the Great Western board, and will not develop its plans until that object is gained.